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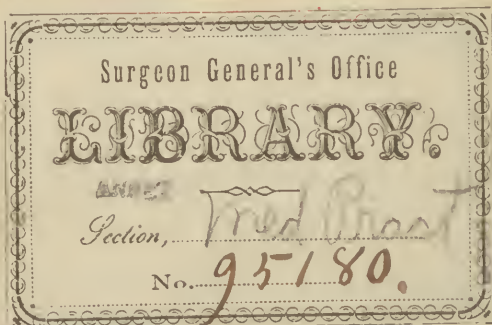
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PRACTICE OF MEDICINE.

PART II.

DISEASES OF THE RESPIRATORY SYSTEM.

PHYSICAL DIAGNOSIS.

Physical Diagnosis is the art of discriminating disease by means of the eye, the ear and the touch. The *signs* thus ascertained are connected with changes or alterations in the form or density of the structures within, and are termed *physical signs*. "*Physical signs are, then, the exponents of physical conditions, and of nothing more.*"

The methods employed in the physical exploration of the chest, are:— To wit, I, **Inspection**; II, **Palpation**; III, **Mensuration**; IV, **Percussion**; V, **Auscultation**; VI, **Succussion**.

Of these, *percussion* and *auscultation*, dealing with sounds, are of the most importance.

For the purposes of physical exploration, the chest is mapped off into regions or divisions, as follows:—

ANTERIORLY.

First:—*Supra-clavicular*, That portion of the chest above the clavicle, usually about an inch.

Second:—*Clavicular*, That portion covered by the inner two-thirds of the clavicle.

Third:—*Infra-clavicular*, That portion between the clavicle and the third rib.

Fourth:—*Mammary*, That portion between the third and sixth ribs.

Fifth:—*Infra-mammary*, That portion below the sixth rib.

LATERALLY.

First:—*Axillary*, That portion above the sixth rib.

Second:—*Infra-axillary*, That portion below the sixth rib.

POSTERIORLY.

First:—*Supra-scapular*, That portion above the scapulæ.

Second:—*Scapular*, That portion covered by the scapulæ.

Third :—*Inter-scapular*, That portion between the scapulæ.

Fourth :—*Infra-scapular*, That portion below the angle of the scapulæ.

INSPECTION.

Inspection signifies “the act of looking,” and all that need be said about the mode of conducting it is, that views of the chest should be taken from the sides and behind as well as from the front, that a good light should be obtained, and the patient placed in as easy and comfortable a position as possible.

Inspection reveals the *form, size, color*, and the *movements* of the chest, as well as the condition of the superficial parts.

In health the sides of the chest are for the most part *symmetrical* in form, size, color and movement. Both sides raising equally during the act of inspiration, and falling equally during the act of expiration. During the act of inspiration the inter-costal spaces in the lower two-thirds of the chest become more hollow, as also do the supra-clavicular fossæ.

Inspiration is almost entirely the result of muscular action; *expiration*, on the other hand, is chiefly due to the elasticity of the lungs and chest walls, aided somewhat in forced respiration by muscular action. The movement of inspiration is of longer duration than that of expiration, and the pause between the acts is momentary.

The *respiratory movement* in the male and in children is most distinct at the lower portion of the chest (*inferior costal breathing*), while in the female most distinct at the upper portion of the chest (*superior costal breathing*).

PALPATION.

By **palpation** is meant the application of the palmar surfaces of the hands and fingers to the chest, by which we appreciate impressions which are capable of being conveyed by the sense of touch.

The objects of palpation are :—

First :—To give more accurate information with regard to what is revealed by inspection.

Second :—To determine the existence and character of various kinds of *fremitus* (vibrations).

By **fremitus** is meant certain tactile impressions conveyed to the surface of the chest, which are classed and produced as follows :—

First :—*Vocal fremitus*, produced by the act of speaking or crying.

Second :—*Tussive fremitus*, produced by the act of coughing, and of use especially when the voice is very weak.

Third :—*Bronchial fremitus*, produced by the passage of air through mucus, blood, or pus, in the bronchial tubes, during the act of respiration.

Fourth :—*Friction fremitus*, produced by the rubbing together of the roughened surfaces of the pleuræ.

When the normal chest vibrates lightly, it is termed the *normal vocal fremitus*.

The *vocal fremitus* is most distinct on the right side towards the apex.

If the lung be consolidated (denser), the vibration is greater and it is more easily felt,—*vocal fremitus is increased*.

In feeble persons, or when any cause interferes with the transmission of the vibration, the *vocal fremitus is diminished* or absent.

MENSURATION.

Mensuration, or measurement of the chest, is of little practical importance, and hence seldom performed. The only measurement likely to be required is the *circular* or *circumferential*, in different parts of the chest, and is performed with either an ordinary graduated tape measure or a double tape measure made by uniting two tapes in such a manner that they start in opposite directions from the same point at the *mid-spinal line*. The tapes drawn around each side until they meet at the *mid-sternal line*, the patient being first directed to effect a complete expiration, the number of inches being noted, and then to take a deep inspiration, the increase in inches noted, the difference between the two giving a rough estimate of the capacity of the lungs.

In right-handed persons the right side is usually one-half to three-fourths of an inch larger than the left; if larger than this it is usually the result of some abnormal condition.

PERCUSSION.

Percussion, or “The act of striking,” to ascertain the composition of structures, affords signs and information of great value in diagnosis.

There are two methods employed, *immediate* and *mediate*.

Immediate, or direct percussion, is performed by striking the thorax directly with the points of the fingers or the palmar surface of the hand. This method of percussion has been generally abandoned, as it does not enable us to distinguish with sufficient correctness between the various shades of difference in the pitch or quality of percussion sounds.

Mediate, or indirect percussion, may be practiced in three different ways, to wit:—

First.—With the finger of one hand interposed between the body and the percussing finger.

Second.—With the finger as a pleximeter and the hammer.

Third.—With the hammer and pleximeter.

The first, of these modes affords the best and most ready information regarding the *resistance* of the parts percussed. The skillful use of the fingers is more difficult to acquire than that of the pleximeter and hammer, and if the examiner has acquired sufficient skill in its performance, an absolutely accurate result may be obtained. “He who is skilled in digital percussion will be able to percuss equally well with the hammer, the inverse of which does not always hold good.” But besides being proficient in the technical parts of the proceeding, it is necessary to possess a sensitive ear, educated to distinguish between the various shades of sound.

When the fingers are employed it is a matter of choice whether one or more fingers are used as the pleximeter. Usually the last phalanx of the first or second fingers of the left hand are used, the other fingers being *raised from the chest, so as not to interfere with the sound vibrations*; they should be applied firmly and evenly to the surface, to prevent the slipping of the soft parts, and to determine the resistance of the chest walls when the blow is given. The rounded ends of the first and second fingers of the right hand are used as a hammer, striking the pleximeter fingers in such a manner that the nails shall not touch the skin of the underlying fingers. The force employed varies in different regions, but usually, for the chest, should be only of moderate degree. forcible percussion is of use only when the sound of deep-seated organs is desired.

The *stroke* should be made perpendicularly to the surface, and not slantingly, as is too often done. The whole movement should proceed only from the *wrist-joint*, and not too rapid or unequal, the fingers being rapidly withdrawn so as not to interfere with the vibrations.

The objects of percussion are to elicit certain *sounds*, and the amount of *resistance* or *elasticity* of the bodies percussed.

The main sounds elicited by percussion are the *dull*, the *clear* and *tympanitic*. These are studied as to *intensity*, *character* and *pitch*.

Percussing the healthy chest, the sound obtained is termed the *normal pulmonary resonance*. It is of variable *intensity*, depending upon the force of the stroke employed and the amount of adipose and muscular tissue covering the thorax and the *tension* of the chest walls.

There is no exact standard of the normal vesicular resonance, but if the two sides of the chest are compared, the normal standard of each person is obtained.

The *character* is termed *pulmonary* or *clear*, as characteristic of the healthy chest wall. The *pitch* is always relatively *low*.

The sounds elicited by percussing a healthy chest are not, however, alike in all parts of the chest. *Anteriorly*, the portion of lung above the clavicle yields a sound which becomes somewhat tympanitic as the trachea is approached. Over the *clavicle* the sound is clear and pulmonary at the centre of the bone, but at the scapular extremity it is duller, and towards the sternum it becomes somewhat tympanitic. At the *infra-clavicular region* the resonance is clear and distinct, but little resistance being offered to the percussion finger, and the sound elicited may be taken as the type of the pulmonary resonance. In this region, however, a slight disparity exists between the two sides; on the right side the sound is less clear, shorter and of higher pitch than on the left side. In the *mammary region* of the right side the resonance of the lung is not so clear, the sound being modified by the size of the mamma and the upper border of the liver. On the left side the heart deadens the sound from the fourth to the sixth rib, and in a transverse direction, from the sternum to the left nipple. This dull sound in the left mammary region is lessened in extent during full inspiration, and in case of emphysema, when the lung more completely covers the heart. In the *infra-mammary region* on the right side the percussion note is dull, excepting during the act of complete inspiration, when the liver is displaced downward by the inflated lung. In the left *infra-mammary region* the sound consists of a mixture of the dull sound of the heart and spleen and of the clear sound of the lung, with the tympanitic sound of the stomach.

Over the upper part of the *sternum* to the third rib the sound is slightly tympanitic. Below the third rib, over the sternum, the sound is dull, due to the presence of the heart and liver.

The *position* exercises some influence on the results of percussion. The more accurate results being obtained when the patient is standing or sitting than when recumbent in bed. While the front of the chest is percussed, the arms should hang loosely by the sides, and the hands may be clasped across the top of the head during the percussion of the axillary region, but during the examination of the back the head must be bent forward and the arms tightly crossed in front.

On the *posterior* surface of the chest the sound also varies according to

the part percussed. Percussing over the scapulæ the sound is duller than between these bones or below their inferior angles. Beneath the scapulæ a clear sound is obtained as far as the lower border of the tenth rib on the right side, where the dullness of the liver begins. On the left side below the angle of the scapula the percussion sound is tympanitic if the intestines are distended, or it may be slightly dull if the spleen is enlarged.

In the *axillary* region the sound is clear and distinct. In the *infra-axillary* region of the right side the sound is duller, owing to the presence of the liver; at the corresponding situation on the left side, the sound is clear or tympanitic, from the distention of the stomach, and at the ninth or tenth rib of the left axillary region dullness and the sense of resistance disclose the presence of the spleen.

The sounds obtained by percussion of the *unhealthy* or abnormal chest are as follows:—

First.—*Hyper-resonance* or increased normal pulmonary resonance is due to the relative increase in the proportion of air to the solid tissues of the lung, provided the tension of the chest walls is not altered, viz.—emphysema, atrophy of the lungs, etc.

Second.—*Dullness* or absence of resonance due to the relative increase of solid tissues in proportion to the amount of air, viz.—different stages of phthisis, pneumonia, pleurisy, etc.

The *pitch is increased or heightened* in proportion to the diminution of the amount of the air and the increase of the solids.

If there is entire want of resonance the percussion note is said to be *flat*; if there is a slight decrease in the resonance of the part the note is said to be *impaired*.

The sense of *resistance* is greater, the greater the consolidation of the lungs and the tension of the chest walls.

Third.—*Tympanitic*, or the drum-like percussion note, is a non-vesicular sound having the character of that of the intestines, and wherever heard, it indicates the presence of air in conditions similar to that of the intestines, to wit: inclosed in walls which are yielding, but neither tense nor very thick.

When elicited over the chest it may be due to the transmitted sound of the distended stomach or colon. It is obtained over the chest in pneumothorax, in moderate pleural effusions above the level of the liquid, over the seat of cavities in the pulmonary tissue, and in œdema of the lungs. It differs from the normal pulmonary resonance in being of a more ringing character and of *higher pitch*.

The *amphoric* or metallic sound is in reality a concentrated tympanitic sound of high pitch, and denotes a large cavity with firm elastic walls.

The *cracked pot or cracked metal* sound is another variety of the tympanitic sound. The condition most commonly occasioning this sound is a cavity in the lung tissue, communicating with a bronchial tube. It requires for its development, a strong, quick blow of the percussing finger, while the patient's mouth is open.

RESPIRATORY PERCUSSION.

The percussion sound will vary greatly with the respiratory movements. If a full inspiration be taken and percussion performed, then a full expiration taken and percussion performed, and then the chest percussed during the normal respiration, slight changes in the character and pitch of the note are obtained, which otherwise would escape detection. Prof. DaCosta has designated this method, *respiratory percussion*.

AUSCULTATION.

Auscultation, or listening to the sounds produced within the chest during the act of respiration, coughing, or by the voice, furnishes the most reliable means of studying their action, and is, therefore, the most valuable method of discriminating the various conditions which may affect the organs of respiration.

Auscultation is either *immediate* or *mediate*.

It is *immediate* when the ear is applied directly to the chest, which may be either denuded or thinly covered.

It is *mediate* when the sounds are conducted to the ear by means of a tubular instrument, called the *stethoscope*.

For ordinary purposes, *immediate*, or direct auscultation is sufficient, but when it is desirable to analyze circumscribed sounds, as in diseases of the heart, or where the patient objects to this method on the score of delicacy, or the auscultator objects on the score of the uncleanness of the person examined, the stethoscope is to be preferred. Moreover, there are certain parts of the chest which can only be explored satisfactorily by a stethoscope, and this instrument has the additional advantage of intensifying the sound.

In auscultation, the following rules, formulated by Prof. DaCosta, should be observed:—

“1. Place yourself and your patient in a position which is the least constraining and permits of the most accurate application of the ear or stethoscope to the surface. Above all, avoid stooping, or having the head too low.”

"2. Let the chest be bare, or, what is better, covered only with a towel or a thin shirt."

"3. If a stethoscope be employed, apply closely to the surface, but abstain from pressing with it. This may be obviated by steadying the instrument, immediately above its expanded extremity, between the thumb and the index finger."

"4. Examine repeatedly the different portions of the chest, and compare them with one another while the patient is breathing quietly. Making him cough, or draw a full breath is, at times, of service; especially the former, when he does not know how to breathe."

SOUNDS IN HEALTH.

If the ear be applied over the *larynx* or *trachea* of a healthy person, a sound is heard with both the act of inspiration and expiration. Its *intensity variable*, its *pitch high*, and its *quality tubular* (viz: a current of air passing through a tube—the larynx or trachea). The duration of the sound during inspiration being somewhat longer than the sound of expiration. A *short pause* follows the act of expiration.

This sound is termed the *normal laryngeal respiration*, and is identical in character, duration and pitch with an important morbid sound, termed *bronchial respiration*.

The sound heard by placing the ear over the lung tissue is different.

The *inspiratory sound* is of *variable intensity*, its *pitch low*, its *quality soft and breezy*, designated *vesicular*; its *duration* is during the entire act of inspiration.

The *expiratory sound* is not always perceptible, it is of *feeble intensity*, *very low pitch*, its *character soft and blowing*, and its *duration* much less than the act of expiration.

These sounds produced in the finest bronchial tubes and air cells, by their expansion and contraction, constitute what is called the *normal vesicular murmur*.

It is to be remembered, however, that the vesicular murmur will be found to vary in the different regions on the same side, and in corresponding regions on the two sides of the chest. These variations, within the range of health, are especially important, and should be memorized by the student.

Infra-clavicular Region.—The vesicular murmur in this region on either side is much more distinct than over any other part of the chest.

On the left side the *inspiratory sound* is of greater intensity, of *lower pitch*, and more distinctly vesicular in quality than that heard upon the

right side. On the right side the *expiratory sound* is nearly or quite the same in length as the inspiratory sound, and is *higher in pitch* and more tubular in quality than the expiratory sound of the left side.

Supra-scapular Region.—Owing to the small number of air vesicles and large number of bronchial tubes, and their nearness to the surface, the respiratory murmur has an intense, high-pitched, tubular and expiratory quality.

Scapular Region.—Compared with the infra-clavicular region, the respiratory murmur heard over the scapula on either side is more feeble, and the vesicular quality less marked.

Inter-scapular Region.—The murmur in this region differs from the normal laryngeal breathing only in intensity and duration.

Infra-scapular Region.—The murmur in this region very closely resembles that heard in the left infra-clavicular region.

Mammary and Infra-mammary Regions.—The murmur in these regions differs from that heard in the infra-clavicular region only in intensity.

Axillary and Infra-axillary Regions.—The respiratory sound in the axillary regions is as intense as in any portion of the chest. In the infra-axillary regions the intensity is less and the pitch lower.

If the ear be applied over the larynx or trachea of a healthy person, and he be directed to count “twenty-one, twenty-two, twenty-three,” in a uniform tone and with moderate force, there is perceived a strong resonance, with a sensation of concussion or shock, and a sense of vibration, thrill or fremitus, the voice seeming to be concentrated and near the ear. Often the articulated words are distinctly transmitted (laryngophony).

The sounds thus heard are termed the *normal laryngeal resonance*.

If the ear or stethoscope be applied over the third rib anteriorly, on either side of the chest, of a healthy person, and he be directed to count “twenty-one, twenty-two, twenty-three,” in a uniform tone, with moderate force, a confused, distant hum is perceived, of variable intensity, accompanied with more or less vibration, thrill or fremitus, most distinct in adults, but notably weaker in women than in men.

This sound is termed the *normal vocal resonance*.

If the ear or stethoscope be applied over the third rib anteriorly, of a healthy person, and he be directed to *whisper*, in a uniform manner, the words “twenty-one, twenty-two, twenty-three,” there is heard a sound corresponding closely in character to the sound of expiration over the same region during the act of forced respiration; or, in other words, a feeble, low-pitched, blowing sound.

This sound is termed the *normal bronchial whisper*, and is produced by the air in the bronchial tubes during the act of expiration.

SOUNDS IN DISEASE.

The vesicular murmur may undergo, in disease, changes in its *intensity*, its *rhythm* and in its *character*.

The *intensity* of the respiratory murmur may be—

1. *Exaggerated* or *increased*.
2. *Diminished* or *feeble*.
3. *Absent* or *suppressed*.

Exaggerated respiration differs from the normal vesicular respiration only in an increase in the intensity of the respiratory sounds. When general over one lung, it will usually indicate deficient action of other parts. In this manner effusions compressing one lung, one-sided deposits, obstruction of the bronchial tubes by secretion, or inflammation of the lung structure, necessitate a *supplementary* respiration in the healthy portion of the same lung or in the other. From its resemblance to the loud, strong respiration of young children, it has been called *puerile* respiration.

Exaggerated respiration is, therefore, to be regarded as indirect evidence of disease in some part of the pulmonary substance.

Diminished respiration, called also senile respiration, as being characteristic of old age, is characterized by diminished intensity and duration of the sound. In the large majority of instances the inspiration suffers the most, the expiratory sound not diminishing in the same proportion. In asthma, emphysema, diseases of the larynx and bronchial tubes, pleuritic pain, rheumatism or paralysis of the chest walls, or in thickening of the pleural membrane, we observe superficial or diminished respiration. When one side of the chest is partially filled with fluid, we may hear a deep-seated, feeble breath sound.

Absent or suppressed respiration occurs whenever the action of the lung is suspended; this may be from external pressure, as when the lung is forced against the spinal column, by the presence of fluid or air in the pleural cavity, or when complete obstruction of the bronchial tubes prevents the air from either entering or leaving the lungs.

The *rhythm* of the respiratory murmur may be—

1. *Interrupted* or *jerky*.
2. *The interval between inspiration and expiration prolonged*.
3. *Expiration prolonged*.

In health the inspiratory and expiratory sounds are even and continuous,

with a short interval between each act; this may be altered in disease, and both sounds, especially the inspiratory sound, have an interrupted or jerky character, termed "cog-wheel respiration."

This jerky breathing is noted in some spasmodic affections of the air tubes, in hysteria, the earliest stages of pleurisy, pleurodynia, and the early stages of pulmonary phthisis. It is most frequently associated with phthisis, due probably to the adhering to the walls of the finer bronchial tubes of tough mucus, which obstructs the free entrance and exit of the air, usually most notable under the clavicles.

The interval between inspiration and expiration may be prolonged instead of these two sounds closely succeeding one another. When this occurs the inspiratory sound may be shortened, or the expiratory sound may be delayed in its commencement. If the inspiratory sound is shortened, it is the result of consolidation of the lungs; if the expiratory sound is delayed, it is the result of lessened elasticity of the lung structure, and is most commonly associated with emphysema.

Prolonged expiration denotes that the air is obstructed in its exit from the lungs. It may be the result of diminished elasticity, the result of emphysema, or from the deposits of tubercle, which impair the contractile power of the lungs. If the former, it is associated with clearness on percussion, if the latter, however, with impaired resonance on percussion. When prolonged expiration is detected at the apex of the lung, and is associated with the impairment of the normal pulmonary resonance, it is for the most part the result of a tubercular deposit.

The *quality* of the respiratory murmur may be

1. *Harsh*, termed *vesiculo-bronchial respiration*;
2. *Bronchial*.
3. *Cavernous*.
4. *Amphoric*.

Harsh respiration, or, as it is termed by Prof. Da Costa, *vesiculo-bronchial* respiration, is that variety where both the inspiratory and expiratory sounds have lost their natural softness. It generally indicates more or less consolidation of lung tissue. In normal vesicular respiration the sounds produced by the air expanding the air cells and finer bronchial tubes obscure the sound produced by the passage of air through the larger bronchial tubes, the healthy lung being an imperfect conductor of sound, so that as soon as any portion of the lung becomes consolidated the vesicular element of the respiratory sound is diminished, the bronchial element

becoming prominent. Harsh respiration is, then, a union of the vesicular and bronchial sounds, being a vesicular sound mixed with some of the qualities of a bronchial sound, the expiration being prolonged and blowing in character. It is present when the bronchial mucous membrane is swollen, as in the earlier stages of bronchitis, also in the earlier stages of phthisis and pneumonia.

Bronchial respiration is characterized by an entire absence of all the vesicular quality. *Inspiration* is of *high pitch* and *tubular* in character; *expiration* still *higher in pitch*, of greater intensity, *prolonged* and *tubular* in quality; the two sounds being separated by a brief interval.

The bronchial respiration encountered in disease closely resembles that heard in health over the larynx or trachea. Whenever bronchial respiration is present where, in health, the normal vesicular murmur should be heard, it indicates consolidation of the lung structure.

Cavernous respiration is a variety of the bronchial respiration, at least so far as the quality of the sound is concerned. It is essentially a blowing sound, yet not always heard during both the acts of inspiration and expiration, being often only perceptible in the one, and in the other mixed with gurgling sounds. Its pitch is lower than that of ordinary bronchial respiration, and it is hollow in character.

For its production there must be a cavity of considerable size in the lung substance, not filled with fluid, near the surface of the chest walls, communicating with a bronchial tube. It is met with most commonly in the last stages of pulmonary consumption, although hollow spaces of any kind, from abscess or dilatation of the bronchial tubes, give rise to it.

Amphoric respiration is a blowing respiration, having a musical or metallic quality. It is a variety of bronchial respiration produced in a large cavity with firm walls, permitting the reflection of the sound. An imitation of this sound, though only an imperfect one, is produced by blowing over the mouth of an empty bottle. The amphoric character is present with both the act of inspiration and expiration.

Amphoric or metallic respiration is indicative of a large cavity, not common in phthisis, but much oftener heard at the upper part of a lung compressed by fluid and air, as in pneumo-thorax.

RALES.

Rales, or as they are termed, adventitious sounds, because they have no analogue in the healthy state, cannot be considered as modifications of the normal respiration.

Grouped according to the anatomical situation in which they are produced we have—

1. *Laryngeal and tracheal râles.*
2. *Bronchial râles.*
3. *Vesicular râles.*
4. *Cavernous râles,*
5. *Pleural râles.*

Râles may be divided into two groups, according to their character, viz. : *dry* and *moist*, and may be audible either during the act of inspiration or expiration, or both.

Dry râles, for the most part, are produced by the vibration of thick fluids which the air cannot break up, and which, therefore, temporarily narrow the calibre of the bronchial tubes. When this narrowing exists in the smaller bronchial tubes the resulting sound is high-pitched, or the râle is said to be *sibilant* or whistling; when the narrowing exists in the larger bronchial tubes, the râle is low-pitched, more musical in character, or *sonorous*.

Dry râles are particularly prone to be dislodged by coughing, and when they are uninfluenced by the acts of breathing or coughing, they do not depend upon the presence of secretions, but upon the narrowing of the air tubes from the pressure of tumors, or from a thickened fold of mucous membrane, or a spasmodic contraction of the air tubes.

Moist râles are those produced by air passing through thin fluids, such as mucus, blood, serum or pus, during the respiratory acts. When the fluid exists in the smaller bronchial tubes, the râles are termed *small bubbling*, or mucous, or *subcrepitant*. When the fluid exists in the large bronchial tubes, the râles are said to be *large bubbling* or mucous.

Moist râles are not persistent, but vary in intensity, and shift their positions as the air drives the liquid which gives rise to them before it, or during violent acts of coughing, or after copious expectoration.

Laryngeal and tracheal râles are those produced within the larynx and trachea, and may be either moist or dry. The moist or bubbling sounds, produced when mucus or other liquids accumulate in this part of the air tubes frequently occur in the moribund state, and are then known as the "death rattles." When not due to this condition, they denote either insensibility to the presence of liquid, as in stupor or coma, or inability to remove liquid by the acts of expectoration, as in croup or inflammation of these parts in the very feeble.

The *dry râles* produced within the larynx or trachea are generally caused by spasm of the glottis, viz.: laryngismus stridulus, whooping cough and croup, or from the presence of a foreign body in the part.

Bronchial râles, resulting from the passage of air through the thin liquid, occasion bubbling sounds. When the liquid is present in the larger-sized bronchial tubes, the râles are said to be *large bubbling*, or large mucous râles, and are heard in acute or chronic bronchitis.

When the liquid is in the smaller bronchial tubes, the resulting râle is called *small bubbling*, small mucous, or *subcrepitant*, also occurring in acute or chronic bronchitis.

Bronchial râles due to the narrowing of the tube by its spasmodic contraction, or to the presence of tough, tenacious mucus, which is set in vibration by the passage of air through the bronchial tubes, are termed dry bronchial râles. Frequently they are suggestive of certain familiar sounds, such as snoring, cooing, humming, wheezing, etc., or they are often musical notes. When produced in the smaller bronchial tubes, they are termed *sibilant*, or high-pitched râles; when produced in the larger bronchial tubes, they are termed *sonorous* or low-pitched râles. They principally occur in the dry stage of bronchitis, or during an asthmatic paroxysm.

The vesicular rale, or, as it is more commonly termed, the *crepitant* râle, is produced within the air vesicles or at the terminal portion of the smaller bronchial tubes.

It is to be distinguished from very fine bubbling sounds, or the subcrepitant râle. "It is a very fine sound, or rather series of very fine uniform sounds, occurring in puffs and limited to inspiration." It resembles the noise occasioned by throwing salt on the fire, or alternately pressing and separating the thumb and finger, moistened with a solution of gum arabic, and held near the ear, or rubbing together a lock of dry hair near the ear.

The *crepitant râle* is produced by the movement of fluid in the air cells or in the finest extremities of the bronchial tubes, or by the forcing open, during the act of inspiration, of the air cells agglutinated by exuded lymph. These sounds may be defined as being very fine, dry, crackling sounds, heard at the end of inspiration. They are usually present in the first stage of pneumonia, and when limited to the apices, are significant of the incipient stage of phthisis.

Cavernous râles, or, as they are commonly termed, gurgling râles, are produced in a pulmonary cavity of considerable size, containing a large quantity of liquid communicating freely with a bronchial tube. The sound

is occasioned by the agitation of the liquid within the cavity, and may be compared to the sound produced by the boiling of liquid in a flask or large test tube. The sound is sometimes high-pitched or musical, whence it has been termed "amphoric gurgling," but it is generally low in pitch. The râle is heard almost exclusively during the act of inspiration, and its diagnostic importance relates to the advanced stage of phthisis.

Pleural rales may be either dry or moist.

Dry pleural râles, or, as they are more commonly termed, *friction sounds*, are occasioned when the surfaces of the pleura are covered with a glutinous substance preventing the unobstructed movement of the pleural surfaces upon each other during the respiratory acts, for in health these movements occasion no sound whatever. The sounds are generally interrupted or irregular, occurring during the act of inspiration or expiration, or during both acts. The character of the sound is variable, being termed rubbing, grazing, rasping, grating or creaking, according to the intensity of the respiratory acts and the amount of exudation.

They are distinguished by the apparent nearness of the sound to the ear, and are usually intensified by firm pressure of the stethoscope upon the chest. When the chest is fixed, especially at the lower two-thirds, and the ear applied over the seat of the sound, it will be found to have disappeared. This sound is diagnostic of the first stage of pleurisy.

Moist friction sounds are produced in the same manner as those just mentioned, the exudation softened in character. This sound is frequently confounded with moist bronchial râles, and its discrimination is often only positive by a careful study of the symptoms and concomitant signs present.

Metallic tinkling is a sign of pneumo-hydro-thorax with perforation of the lung, and when found is usually diagnostic of this affection, although it occurs rarely in cases of phthisis with a large cavity, the physical conditions for its production being similar to those in pneumo-hydro-thorax, to wit: a space of considerable size containing air and liquid, the space communicating with the bronchial tubes.

It consists of a series of *tinkling sounds*, of a high-pitched, silvery or metallic tone, and is very well imitated by dropping a small marble into a metallic vase. It occurs irregularly, not being present with every act of breathing, and may be produced by forced, when not heard during tranquil breathing.

Were it not for the location and the absence of concomitant signs, it might be confounded with tinkling sounds sometimes produced within the stomach.

THE VOICE IN DISEASE.

The normal vocal resonance, as heard over the third rib of the chest anteriorly on either side, may have its *intensity*—

1. *Diminished or absent.*
2. *Increased or exaggerated.*
3. Its resonance may be of the character of *bronchophony*, or
4. *Pectoriloquy*, or
5. *Ægophony*, or of the
6. *Amphoric voice.*

The vocal resonance may be diminished or feeble in bronchitis with free secretion, pleurisy with effusion, or in complete consolidation of lung structure and bronchial tubes.

The vocal resonance is absent in pneumo thorax and in pleurisy with effusion.

Exaggerated vocal resonance differs from the normal vocal resonance in a slight increase of its intensity. It denotes a slight degree of solidification of lung tissue, and is chiefly of value in the diagnosis of tubercle.

Bronchophony, or the voice concentrated near the ear, raised in pitch and in intensity, denotes complete consolidation of pulmonary tissue in those parts in which the sound is abnormally present.

Pectoriloquy is a complete transmission of the voice to the ear, the articulated words being distinctly recognized. It has a close resemblance to the resonance heard over the larynx in health. Its presence indicates either a pulmonary cavity or more complete consolidation—in other words, an exaggerated bronchophony.

Ægophony is a modification of bronchophony, consisting in tremulousness of the voice, its character nasal or bleating, somewhat suggestive of the cry of a goat. When heard, it may be considered a sign of pleurisy with slight effusion, or pleuro-pneumonia.

Amphoric voice, or “the echo,” as it is sometimes called, is a musical sound, of a somewhat hollow, metallic character, like that produced by blowing into an empty bottle. It is sometimes produced in large cavities within the lung, but is especially incident to pneumo-thorax.

Increased bronchial whisper is a sound in which the whispered words are abnormally intense, and higher in pitch than the normal bronchial whisper. It has the same significance as exaggerated vocal resonance.

SUCCUSSION

The **succussion** or splashing sound is pathognomonic of one affection, namely: pneumo-hydro-thorax.

It is obtained by jerking the body of the patient with a quick, somewhat forcible movement, the ear being very near or in contact with the chest.

The sound is like that produced when a small keg, partially filled with liquid, is shaken. The only liability to error is in confounding this splashing sound with that sometimes produced within the stomach; but attention to concomitant signs will always protect against this error.

ACUTE NASAL CATARRH.

Synonyms. Acute rhinitis; acute coryza; "cold in the head."

Definition. An acute catarrhal inflammation of the mucous membrane lining the nose and the cavities communicating with it; characterized by feverishness, feeling of fullness in the head and increased secretion.

Pathological Anatomy. *Hyperæmia* of the mucous membrane, attended with redness, swelling and deficient secretion. This tumefaction is partly increased by an *œdematous infiltration*, when a quantity of colorless, salty and very thin liquid flows from the nose. The secretion soon becomes thicker and opaque, due to the desquamation of the epithelium of the nasal mucous membrane, with a copious generation of young cells, the hyperemia and the swelling of the membrane diminishing.

Rarely, and then in newborn infants and those affected with eruptive fevers, the exudation in the nasal passages is of a fibrinous nature, somewhat similar to that seen in diphtheria.

Causes. Atmospherical changes are the most frequent and influential. Exposure of the neck to a draft of cold air, or of the feet and ankles to cold and dampness, or changing from a warm to a cold atmosphere suddenly, are among the most usual causes.

Irritating gases and vapors, certain powders, as ipecac, tobacco, etc., excite an irritation of the nasal mucous membrane.

Acute coryza is usually present in the initial stage of measles and influenza.

Epidemic influence occasionally prevails on an extensive scale. The poison of syphilis or the long continued use of the iodide of potassium not unfrequently act as exciting causes.

Symptoms. "A cold in the head" is usually preceded by a feeling of *lassitude* or weariness and more or less *headache*; then occur irregular *chilly sensations*, followed by more or less *feverishness* and an uncomfortable feeling of *dryness* in the nares, with a strong inclination to *sneeze*. This is soon followed by an abundant *watery and saline discharge*, which is continually dripping from the nostrils, or occasions an attack of sneezing followed by blowing the nose, which relieves the congested and swollen membrane for a few moments. The relief is temporary, however, the fullness of the head and difficult obstructed nasal respiration rapidly returning. The anterior nares are red and inflamed. The discharge soon assumes a purulent character. The voice has a peculiar tone, rather nasal and muffled in character, from the swelling of the nasal mucous membrane. Within a few days the swelling subsides, the secretion lessens, and health is restored in about ten days from the beginning of the attack.

When the attack is almost terminated hard crusts may form within the nostrils, either on the septum or turbinated bones, and are with difficulty expelled by blowing the nose.

Duration. In mild cases about ten days; severe cases continue, more or less marked, for two weeks.

Prognosis. Favorable if early and proper treatment be instituted; if neglected, shows a strong tendency to become chronic, except in very young infants, in whom, if the catarrh is not rapidly relieved, the infant loses flesh and strength, from inability to take the breast.

Treatment. Attacks due to atmospherical causes may often be aborted by the early administration of *quinia sulph.* gr. x-xv, with *morphia sulph.* gr. $\frac{1}{4}$.

If the attack is already developed, relief is soon afforded by *tinct. belladonnæ*, gtt. ij every hour until six doses are taken, after which one drop every two or three hours until the physiological actions of the drug are produced; if much fever be present, *tinct. aconiti*, gtt. i-ij, may be added. Relief is often quickly afforded by

R.	Pulv. cubebæ.....	ʒj	
	Bismuth subnit.....	ʒij	
	Morphiæ muriat.....	gr. ij.	M.

SIG.—Used by *insufflation* every two or three hours.

Attacks of nasal catarrh due to the poison of syphilis should be at once placed upon constitutional treatment.

Attacks of nasal catarrh associated with the eruptive or mild fevers require no special treatment.

It is well to remember that attacks of nasal catarrh occurring in very young children are generally the result of hereditary syphilis, and should be treated accordingly.

CHRONIC NASAL CATARRH.

Synonyms. Chronic rhinitis; chronic coryza.

Definition. A chronic inflammation of the mucous membrane lining the nasal passages, with more or less alteration of structure; characterized by a sensation of fullness in the nares, increase of the secretion and perversion of the special sense of smell and of hearing.

Causes. The result of repeated attacks of the acute variety; inhalation of irritating vapors and dust; syphilis and scrofula.

Pathological Anatomy. The mucous membrane of the nares is *thickened*, of a *dark-red*, sometimes *grayish color*, the superficial veins dilated and varicose, often forming polypoid enlargements. In many cases there is *ulceration* of the structure, with more or less loss of substance; the secretion is thick, tough, of a greenish character, and often very fetid; large collections of dried mucus are often formed upon the turbinated bones and septum.

Symptoms. A feeling of *fullness* in the *nares*, *increase* of the *secretion*, the character being thick and greenish, which, dropping posteriorly into the pharynx, causes paroxysms of "hawking."

The *special sense of smell* is more or less impaired and, in many cases, entirely abolished; the *special sense* of hearing is more or less diminished, from an extension of the inflammation to the Eustachian tubes; the *voice* has a peculiar *nasal intonation*.

Sudden changes of temperature cause acute exacerbations of these symptoms, when there is superadded difficult nasal respiration.

If *ulceration* of the nares occurs, the discharge has a *fetid odor*. This condition is termed *ozæna*.

From extension of the inflammation to the nasal duct or its obstruction, the tears flow over the malar eminence (*epiphora*), leading to more or less congestion of the eyes.

Prognosis. Permanent cure seldom obtained, the disease being so decidedly chronic and obstinate, the treatment is of necessity a protracted one, and the majority of patients tire of it before complete restoration is effected.

Treatment. If it depend upon diathetic conditions, the cause must be ascertained and treatment directed accordingly.

Where no diathetic cause can be determined, attention should be paid to the general health, the secretions constantly attended to, and the diet nutritious and digestible.

Cleanliness of the nasal passages is of the utmost importance, and is best effected by the *post-nasal syringe*, with either simple or medicated tepid waters, after which decided benefit follows the use of one of the following:—

R.	Sodii borat.....	ʒ ij	
	Bismuth subnit.....	ʒ ij	
	Morphia muriat.....	gr. j.	M.

Or—

R.	Iodoformi.....	ʒ j	
	Pulv. acid tannic.....	gr. v	
	Bismuth subnit.....	ʒ j.	M.

Sig.—To be used by *insufflation* or as a *snuff*, every three or four hours;—

Or—

R.	Ammonii muriat.....	ʒ j	
	Glycerinæ.....	ʒ ij	
	Vini pices.....	ʒ ij.	M.

Sig.—Five to ten drops, dropped into each nostril two or three times a day.

ACUTE TONSILLITIS.

Synonyms. Amygdalitis; quinsy.

Definition. An acute parenchymatous inflammation of one or both tonsils, with a strong tendency towards suppuration; characterized by moderate fever, pain in the throat, a constant desire to relieve the throat, difficult deglutition, and more or less muffling of the voice.

Causes. Generally attributed to exposure to cold, but in the majority of cases the exposure is so slight that there must be a predisposition to the affection; for persons once affected are particularly prone to repeated attacks upon the slightest exposure.

Pathological Anatomy. One or both tonsils will be seen, on inspection, to project from its bed, as a rounded, deep-red body, which may

even extend beyond the median line, when they may entirely occlude the isthmus of the fauces; the half arches and posterior border of the soft palate is reddened and somewhat swollen. The surface of the tonsils is often covered with small, yellowish points, which closely resemble patches of false membrane, but careful inspection will show that they are beneath the mucous membrane, being only the distended follicles of the gland.

Symptoms. Onset more or less sudden, with *rigors*, *rise of temperature*, 102° to 104° F., *full, frequent pulse*, 100 to 120, *headache*, *thirst*, *pain and swelling at the angle of the jaw*, with a constant desire to clear the throat, *difficult and painful deglutition*, from the enlarged tonsil, almost closing the fauces, when the *respiration* is more or less *impeded*; the *voice* is more or less *muffled*, and attempts at phonation increase the pain.

Darting pains along the Eustachian tubes are of frequent occurrence, the patient complaining of *earache* and more or less *deafness*.

If *suppuration* is imminent the throat becomes more painful, the character of the pain throbbing, the febrile phenomena increased, with more or less depression, the symptoms seeming to be of great danger, when suddenly, after an effort at vomiting, or spontaneously, the tonsillar abscess bursts, a quantity of pus escapes from the mouth, prompt relief following.

Duration. The disease lasts from three to seven days, terminating either by suppuration or the gradual resolution of the enlarged glands.

Prognosis. In the majority of cases the result is favorable, it very rarely proving fatal, except in children, and only then by obstructing the respiration, and at the same time so seriously interfering with nutrition that the child's strength fails.

Diagnosis. Tonsillitis can hardly be mistaken for any other affection if the fauces are inspected.

Treatment. If seen early *scarification* should be performed, thereby relieving the engorged vessels of the gland. The *external* use of *ice* over the site of the glands and small pellets allowed to dissolve in the mouth afford great relief. If the application of cold is objectionable, heat may be substituted, in the form of warm compresses or poultices.

Internally the administration of *tinct. aconite*, in small doses frequently repeated, rapidly reduces the temperature, the frequency of the pulse, and by its local action lessens the pain and swelling. If from any cause the internal use of aconite is contra-indicated, the *tinct. aconite* may be diluted with *glycerina* and painted over the affected parts. The author has seen

excellent results follow the use of *sodii salicylat.*, gr. x., in solution, every hour, until four doses are taken, when the remedy is omitted for three hours, and again administered as at first.

If *suppuration* is impending *quinia* should be used in gr. iij-v, every three or four hours; *locally* application of poultices over the affected gland.

The *diet* must be in the shape of gruels, as it is impossible for the patient to swallow any solid substance, and in cases where even gruels cause painful deglutition, thin oatmeal gruel can be used with advantage.

ACUTE LARYNGITIS.

Synonyms. Catarrhal laryngitis; "sore throat."

Definition. An acute catarrhal inflammation of the mucous membrane of the larynx; characterized by feverishness, diminished or suppressed voice, painful deglutition, and more or less impeded respiration.

Causes. Atmospherical changes; the inhalation of irritating vapors, such as gas, smoke, ammonia, etc., and in children violent attacks of crying.

Pathological Anatomy.—In mild cases there is a transient *congestion* (hyperæmia) of the mucous membrane over the entire, but most commonly, irregular parts of the larynx, with more or less swelling of the parts, and diminished secretion; the mucous membrane soon returns to its normal condition, the secretion being slightly increased.

Symptoms. The onset is rather sudden, with irregular *rigors*, a feeling of *heat, rawness* and *tickling*, referred to the larynx and pharynx, with a sensation of the presence of a foreign body in the throat. Swallowing causes pain by the upward movement of the larynx and by the pressure of the food on the larynx as it passes down the "gullet."

Coughing from the onset, of a *noisy, harsh, hoarse* or *toneless* character; in children the cough has a ringing, sonorous, so-called "croupy" character, the acts of coughing causing a sensation of scratching in the larynx. The first day or two there is no expectoration, but in a short time secretion is poured out and the cough has a loose character. In the early stages the sputa may be slightly streaked with blood. The *voice* is at first decidedly *hoarse*, soon followed by *aphonia*.

Duration. Usually about one week; if very severe two or three weeks may elapse before the larynx returns to its normal condition.

Prognosis. Simple catarrhal laryngitis never ends fatally.

Treatment. Confinement to an apartment of uniform temperature, the air kept moist by the vapor of water disengaged in it.

Locally a *hot or cold pack* should be kept constantly wrapped about the throat, and if its application is preceded by the temporary use of a weak mustard plaster, the relief afforded is more rapidly obtained. At the very beginning of an attack the feet should be placed in a hot mustard foot bath, and a *saline cathartic* administered.

Internally, *tinct. aconiti*, gtt. j-ij every hour or two, combined with *tinct. opii deodorized*, gtt. j-v, relieve the inflamed mucous membrane, or instead, *antimonii et potassii tart.*, gr. $\frac{1}{20}$ – $\frac{1}{30}$ every hour. If a tendency to spasm of the glottis obtains, full doses of the *bromides* should be administered at once.

ŒDEMATOUS LARYNGITIS.

Synonym. Œdema of the glottis.

Definition. An inflammation of the mucous membrane of the larynx and about the glottis, with a serous effusion into the sub-mucous connective tissue, characterized by obstruction to the respiration.

Causes. The result of acute laryngitis, abscess in or about the throat or tonsils, erysipelas of the face, scarlatina, smallpox, Bright's disease.

Pathological Anatomy. Infiltration into the loose connective tissue of the ary-epiglottic folds, the glosso-epiglottic ligament, the base of the epiglottis, and the inter-arytenoid space. If the true vocal cords are inflamed, their color changes, and instead of appearing white, glistening and brilliant, they are dull, grayish-red or violet-red in patches. If the swelling be the result of purulent infiltration, the parts affected present a deeply congested color, with here and there spots of a yellowish hue.

Serous infiltration, sufficient to cause fatal œdema, disappears with death, leaving but slight traces to account for the formidable symptoms.

Symptoms. At the onset the same as those of catarrhal laryngitis, soon followed by a sensation of *distress* and *pain* in the *throat*, with *difficulty of breathing* and *paroxysms of impending suffocation*. The *cough* at first is dry and harsh, but as the infiltration increases it becomes stridulous and suppressed. The *voice*, at first muffled, is soon suppressed. The *difficulty of respiration* in some cases becomes so great that the face becomes blue, the eyes protruded, the patient gasping for breath, these symptoms continuing for a few moments, when relief is temporarily

afforded, the paroxysms soon recurring, however, in one of which, unless decided relief is rapidly afforded, the patient dies.

Prognosis. As a rule unfavorable; if early and vigorous treatment is instituted, recovery is possible, but without it death is the inevitable result, the patient dying asphyxiated. The duration of infiltration of the larynx varies from a few hours to several days.

Diagnosis. The points of difference between œdema of the glottis and capillary bronchitis, asthma and croup will be pointed out when discussing those affections.

But the history of the case, the sudden occurrence of suffocative attacks, an examination of the throat by passing the index finger carefully over the base of the tongue, will generally prevent the disease being mistaken for any other affection.

Treatment. At the onset, if the febrile reaction is high, the use of *tinct. aconiti*, gtt. ij-iv, repeated, with the administration of an active *purgative*, may prevent the serous effusion.

If the *infiltration* has already occurred and is slight in amount, *scarification*, guiding the instrument by the index finger of the opposite hand, may afford relief, or the hypodermatic injection of *pilocarpine nitrat.*, gr. $\frac{1}{8}$, repeated. If these means fail *tracheotomy* is indicated; in those cases of sudden and rapid infiltration of the glottis or larynx occurring in Bright's disease, erysipelas or scarlatina, and especially the former, *tracheotomy should be performed at once.*

In all cases of infiltration of the larynx stimulants should be boldly administered per rectum if stomachic administration is hindered.

If the infiltration be composed of *pus*, *quinia*, gr. v doses every four hours, with *stimulants*, are indicated.

SPASMODIC CROUP.

Synonyms. Spasmodic laryngitis; false croup; catarrhal croup.

Definition. A catarrhal inflammation of the mucous membrane of the larynx, associated with *spasmodic contraction* of the glottis; characterized by paroxysmal coughing, difficulty of breathing and attacks of threatened suffocation.

Causes. Delayed or difficult dentition, excesses of eating and drinking, excitement, violent emotion and atmospherical changes, are all given as causes for simple croup. It is often hereditary.

Pathological Anatomy. *Congestion* of the mucous membrane of the larynx, with slight swelling and deficient secretion, are the only changes that have been thus far noted in this disease.

Symptoms. The *onset* occurs chiefly during the *night*, the child on retiring having either its usual health or, perhaps, is a little feverish. After several hours of sleep the child is *suddenly awakened* by a *paroxysm of suffocation* and a *dry, harsh, ringing cough*. After an hour or two the breathing becomes easier, the cough less "croupy," the skin covered with more or less perspiration, and the child falls to sleep. The next day there is present cough of a loose character, the respiration being about normal. If no treatment be instituted, the same phenomena occur on the second night, the child being apparently well during the second day, the cough being less in amount; phenomena of a similar character, but of much less severity, are present the third night, after which the disease usually disappears.

If the symptoms of the first paroxysm continue pronounced for two or three days, there is a strong probability that the inflammation may become fibrinous in character.

Prognosis. Spasmodic or simple croup always terminates favorably.

Diagnosis. The symptoms are so characteristic that it seems impossible for the affection to be mistaken for any other disease.

Treatment. During the paroxysm, the child should at once be placed in a *hot bath* and *hot or cold compresses* wrapped about the *throat*. These means may be preceded or followed by a mild *emetic*. The *air* of the room should be kept *moist* by the vapor of steam constantly disengaged in it.

For the prevention of an attack of spasmodic croup a mild cathartic, followed by *potassii bromidi*, gr. x-xv, combined with minute doses of *antimonii et potassii tart.*, or *ipécac*, are serviceable, the child, of course, being kept in the house for several days, on an easily assimilated diet.

MEMBRANOUS CROUP.

Synonyms. Croupous laryngitis; true croup.

Definition. An acute inflammation of the mucous membrane of the larynx, attended with the exudation of a tough secretion, the *false membrane*, and the occurrence of *spasm of the glottis*; characterized by febrile reaction, frequent ringing cough, dyspnoea, with loud inspiratory sound,

and altered or extinct voice, showing a strong tendency towards death by asphyxia.

Causes. A disease of childhood, most common in strong, vigorous, well-nourished males. Certain families present a strong hereditary tendency. Most common during a humid winter.

Pathological Anatomy. Intense *hyperæmia* of the mucous membrane of the larynx, associated with *swelling*, *œdema* and marked *redness*. There soon appears upon the surface of the mucous membrane a grayish pellicle, rapidly coalescing and becoming thicker, the *opaque false membrane*, which differs in extent, thickness and adhesiveness in different portions of the larynx. In all cases the false membrane is found on the vocal cords and inner surface of the epiglottis. The first *exudation* (membrane) softens by the exudation of serum, which is exuded and is then mechanically dislodged by acts of coughing or vomiting, when successive deposits occur upon the mucous membrane.

When the false membrane is detached the mucous membrane of the larynx is found unaffected, so far as the loss of structure is concerned. Several successive crops of membrane may occur after the detachment, or it may cease to form entirely after the removal of the first exudation.

On *microscopic examination* the false membrane is found to be composed of a fine network of fibrillæ, holding in their interstices leucocytes of an albuminous or fibrinous nature.

The false membrane may extend into the pharynx, but especially is it liable to extend into the trachea and bronchial tubes, and as the inflammation extends downward the character of the exudation changes from a fibrinous to a muco-purulent character.

Symptoms. The onset of "true croup" is, either suddenly, by an attack of the spasmodic form, or gradually, as an acute catarrh of the larynx, rapidly increasing in severity, with a feeling of *heat* in the throat, *huskiness* of the voice, *harsh cough*, *fever* and *thirst*, the hoarseness soon becoming marked and the *cough* having a *metallic*, "*croupy*" character, rapidly *changing* to a *stridulous*, *husky* sound; every few moments the child takes a sudden, deep *stridulous inspiration*, the voice becomes more and more husky. *Difficulty of breathing* now follows, the child being unable to lie down, or if, exhausted by the efforts at inspiration, it is quiet for a moment, it soon starts up in a fright, breathing more heavily, with a *shrill, whistling inspiration*. Soon, from the narrowing of the glottis, from the presence of the membrane, the expiration becomes difficult and noisy,

and *suffocation* seems imminent, from *paroxysmal* attacks of *spasm of the glottis*, when the child tosses wildly about, tears at its throat, as if to remove some obstacle, the face becoming *cyanosed*, the alæ of the nose working rapidly, the mouth wide open, the inspiratory efforts gasping, the body covered with a profuse sweat, and death seeming imminent, when the spasm is relaxed, air enters the chest, the breathing becomes somewhat easier, and the child, exhausted and partially stupefied, drops into a fitful sleep of a few moments' duration.

The *suffocative attacks* return at shorter intervals or there occur decided remissions between them, considerable portions of the false membrane being expelled, when the child falls into a refreshing sleep.

In those cases which tend to a favorable termination, the appearance of improvement noted between the suffocative attacks is maintained, the paroxysms of suffocation becoming less frequent, the expectoration of membrane more marked, the difficulty of breathing lessens, cough looser, the voice gradually returning, the fever, which has been more or less high during the attack, disappearing.

If, instead of an improvement, the case tends toward a fatal termination, the suffocative attacks become more frequent, expectoration absent, the voice and cough inaudible, although the efforts at speaking and coughing are visible, the difficulty of breathing continuing, the respirations becoming more frequent and shallow, but without whistling and stridor, cyanosis deepens, the countenance has an indifferent, drowsy and stupid look, the eyes dull and nearly closed, the symptoms of depression apparent, the pulse rapid and weak, the surface covered with a cold, clammy sweat, the extremities cold, stupor and insensibility more marked, the child dying of carbonic acid poisoning or *asphyxia*.

Duration. The duration of true croup is about one week, rarely continuing ten days.

Prognosis. A very fatal disease. The danger is great in proportion to the age and feebleness of the child. The most *unfavorable symptoms* are: Loud, stridulous, inspiratory and expiratory sounds, laborious and prolonged expiration, depression of the base of the thorax during inspiration, whispering voice or complete aphonia, congestion of the face and neck, stupor, weak, rapid and irregular pulse, cold extremities, and a cold, clammy perspiration.

The *favorable symptoms* are: Expectoration of false membranes, decrease of the stridulous respiration, voice changing from whispering to

hoarseness, loosening of the cough, moderation of the fever, an improvement of the general condition.

Diagnosis. *Œdema of the glottis* may be mistaken for croup until the period of the formation of the characteristic membrane. The chief points of distinction from the onset are, however, absence of fever, paroxysmal attacks of difficult respiration, followed by complete return to the normal condition.

Laryngeal diphtheria differs from true croup in its history, its epidemic character, the marked depression even before obstruction of the larynx, the presence of albumen in the urine, and the sequellæ.

Treatment. The *indications* for treatment are to *detach and remove the false membrane, to prevent its formation, to prevent the attacks of spasm of the glottis, and to maintain the strength.*

To detach and remove the membrane *emetics* are of the highest utility, the favorite remedy of this class being that first used in this disease by Prof. Fordyce Barker, consisting of *hydrargyri subsulphas flavus* (turpeth mineral), gr. ij for a child of two years of age, repeating the dose as often as rendered necessary by the obstructed breathing.

To prevent the formation of membrane, *hydrargyrum* in some form is one of the most reliable agents we possess, either in the form of *hydrargyri chloridi mite*, gr. $\frac{1}{8}$ – $\frac{1}{4}$ every two hours, in combination with *sodii bi-carbonate*, gr. ij, or *hydrargyri chloridi corrosivum*, gr. $\frac{1}{48}$ – $\frac{1}{20}$ every two or three hours. *Quinia*, gr. ij–iv every four hours, in many cases acts in the same manner. *Antimonii et potassii tart.*, gr. $\frac{1}{30}$ every three hours, is often used for the same purpose.

To prevent the attacks of spasm, small doses of *opium* in the form of *pulv. ipecac. comp.* (Dover's powder), or full doses of the *bromides*, preference being given to *ammonii bromidi*, as suggested by Prof. Bartholow, on account of its being "eliminated by the bronchial and faucial mucous membrane, thus acting locally."

To maintain the strength of the patient *alcoholic stimulants* in full doses, nutritious but easily digested *aliment*, *quinia* in tonic doses, and *ammonii carb.* are particularly indicated.

Locally, the use of all caustic or irritating applications to the fauces or larynx is emphatically contra-indicated.

The *inhalation* of the vapor of slacked, freshly burned lime is one of the most ready and efficient means for assisting in the detachment of the false membrane. The application of *cold or hot compresses*, according to

the feelings of the patient, around the throat, have a strong tendency to prevent the recurrence of spasms. Cases in which the membrane shows a tendency to slowly loosen itself, if the patient's strength does not contraindicate it, are much benefited by the application of *mustard plasters*, or even small *fly-blisters*, to the larynx.

ACUTE BRONCHITIS.

Synonyms. Bronchial catarrh; acute catarrhal bronchitis; "cold on the chest."

Definition. An acute catarrhal inflammation of the bronchial tubes of the larger, middle and third size, characterized by fever and oppression in breathing, with scanty followed by free expectoration.

Causes. Most common in childhood and old age. More common in climates characterized by considerable moisture of the atmosphere, combined with low temperature, and especially where there are sudden and marked variations.

Pathological Anatomy. *Hyperæmia* of the mucous membrane of the bronchial tubes, manifested by a diffused *redness*, *swelling*, *œdema* and *diminished secretion*; this is followed by *increased secretion* and overgrowth and desquamation of the epithelium, together with a copious generation of young cells, the expectoration then being of a yellowish color. As a result of the hyperæmia, rupture of the capillaries of the mucous membrane frequently occur, when the slight expectoration of the first stage is streaked with blood.

In cases of bronchitis following the exanthemata in scrofulous patients, the bronchial glands participate in the inflammation, become hyperæmic, swollen and filled with secretion, and not unfrequently the glandular elements undergo hyperplasia, and finally the "cheesy" degeneration.

Symptoms. The *invasion* generally characterized by the occurrence of nasal or laryngeal catarrh, or both, the patient chilly, followed by flashes of heat, the limbs, joints, and even the body, are affected with pain, of an aching, contused character, and sense of fatigue and want of energy; there may be a furred tongue, anorexia and constipation.

In nervous, irritable persons and children there may be slight delirium, and often in very young children, especially during the period of dentition, convulsions may usher in the attack.

After a day or two of these initiatory symptoms, those characteristic of bronchial catarrh set in.

Pain is experienced *behind the sternum*, especially toward its upper part, of a *raw, burning or tearing* character, *aggravated* by a deep *inspiration* or *coughing*; the pain also radiates toward the sides, following the course of the primary bronchial tubes. *Tenderness* over the sternum is often present, the skin tender on percussion.

Cough from the onset, at first in paroxysms of a hard, dry character, changing as the disease progresses, and becoming looser, followed by *free expectoration*. The *expectoration* at first is small in quantity, almost transparent, frothy, and having a saltish taste, often streaked with blood. As the disease progresses it becomes more free, of a yellowish or greenish-yellow color, and a tenacious character.

There is present *slight fever*, the skin hot and dry, the pulse frequent, the appetite lost, thirst moderate, bowels constipated.

A feeling of languor and weariness and often considerable depression, quite out of proportion to the febrile state.

Percussion. *Normal* except in those rare cases in which the bronchial glands are involved, when irregular spots of dullness are developed.

Auscultation. *First stage*; the bronchial membrane swollen and dry, the respiratory murmur is *harsh* or *vesiculo-bronchial* in character, associated with diffused *sonorous* and *sibilant* râles. *Second stage*; the secretion of the bronchial mucous membrane being increased, the respiratory murmur is *less harsh* in character, but associated with *large and small, moist or bubbling* râles.

Prognosis. Acute bronchitis of the larger tubes; usually terminates in complete resolution within two weeks. In children and the aged the course is more protracted and the symptoms more severe, but recovery usually occurs.

Diagnosis. The points of resemblance and differences present in acute bronchitis and other diseases of the chest will be pointed out when those diseases are discussed.

Treatment. During the *invasion*, *quinia*, gr. x, combined with *morphia sulph.*, gr. $\frac{1}{6}$, will usually prevent or abort an attack of acute bronchitis. In the *first stage*, when the mucous membrane is swollen and dry, either of the following prescriptions will give prompt relief:—

R.	Antimonii et potassii tart.....	gr. $\frac{1}{16}$	
	Morphia sulph.....	gr. $\frac{1}{16}$	
	Aqua lauro-cerasi.....	ʒj.	M.

Every two or three hours; or—

R. Antimonii et potassii tart.....	gr. $\frac{1}{20}$	
Amonii muriat.....	gr. x	
Syr. prun. virg.....	℥ ij	M.

Every three hours.

Locally, hot mustard foot baths and mustard plasters over the chest, the patient being confined to an apartment in which the air is moistened by the vapor of hot water.

Second stage, the secretion of the mucous membrane being copious, decided relief follows the use of—

R. Ammonii muriat.....	gr. x	
Mist. glycyrrh. comp.....	℥ ij.	M.

Every four hours, and quinia, gr. iij, every five hours.

Attention should be paid to the secretions and diet of the patient.

CAPILLARY BRONCHITIS.

Synonyms. Broncho-pneumonia; “suffocative catarrh.”

Definition. An acute catarrhal inflammation of the *terminal* bronchial tubes, or bronchioles; characterized by fever, impeded and increased respiration, impeded circulation, slight cough and scanty expectoration.

Causes. Most common in childhood, following exposure to cold, sudden changes of temperature, measles and whooping cough.

Pathological Anatomy. *Hyperæmia*, redness and swelling of the lining membrane of the bronchioles, with the exudation of a tough, tenacious secretion.

The air vesicles may remain unaffected, but in the majority of cases they are involved, producing the complication known as “*catarrhal pneumonia*.”

In cases in which the air cells are not involved in the inflammatory changes, during the act of inspiration the air passes through the secretion, blocking up the smaller tubes, but is prevented from escaping during the act of expiration, the secretion in the smaller tubes acting as a valve, the result being distention of numerous globules, producing a circumscribed or diffused *functional emphysema*. If the secretion produces complete closure of any of the smaller tubes, the air previously drawn into the vesicles will be absorbed, causing in them *collapse* (atelectasis).

If the inflammation extends to the alveoli of the lungs, it produces the condition known as *broncho-pneumonia*, a frequent complication in children

and feeble elderly people; it is most commonly lobular in character whence the term "*lobular pneumonia*."

Symptoms. Usually preceded by more or less ordinary bronchitis, followed by *rise of temperature*, 102–103° F., *difficult and increased respiration*, constant, with *paroxysms* in which the dyspnœa is aggravated and rapid *cyanosis* occurs.

The circulation through the lungs being impeded by the dyspnœa, the *pulse* becomes feeble and flickering, and there results general congestion of the venous system, the countenance livid, the lips and nails blue, the surface cold and often covered by a clammy perspiration, the mind dull, and in children stupor and convulsions rapidly supervene, the result of *non aeration of the blood*. The *cough* is slight, but *suppressed* in character, the *expectoration scanty*. When cyanosis occurs the cough may almost entirely cease; expectoration also ceases, death soon following, from *apnœa and depression*.

Percussion. *Normal*, except over those portions of the lungs which are in a condition of *collapse*, when dullness rapidly develops and as rapidly disappears, changing to other portions of the lung.

Auscultation. *First stage, harsh or vesiculo-bronchial*, soon followed by *diminished respiratory murmur*, associated with *sub-crepitant râles*.

Prognosis. In children, on account of their inability to expectorate, which leads to rapid collapse of the lungs, and in the aged, the prognosis is most grave. In the strong and vigorous recovery is effected under prompt and energetic treatment.

Diagnosis. Capillary bronchitis is often mistaken for true catarrhal pneumonia, the points of distinction between which will be pointed out when discussing that affection.

Treatment. *Emetics* should be given from the onset, especially to vigorous children, and followed by—

R.	Ammonii iodidi.....	gr. iij	
	Ammonii carb.....	gr. iv	
	Ext. glycyrrh. pulv.....	gr. iij	
	Syr. tolu.....	ʒj.	M.

Every two or three hours, for a child five years of age.

Quinia, gr. ij every four hours, and the early and bold use of *spts. vini gallici*, to prevent or modify the depression that sooner or later follows. Nutritious, easily digested food, milk being the most efficient, should be administered at frequent but regular intervals.

Should symptoms of *cyanosis* or pulmonary collapse occur, the indications are for *more vigorous emesis and stimulation*.

Locally, warm applications, taking care that they are not heavy, in which case they add to the difficult respiration, are useful adjuncts to the above means.

CROUPOUS BRONCHITIS.

Synonyms. Membranous bronchitis; plastic bronchitis; diphtheritic bronchitis.

Definition. An acute inflammation of the mucous membrane of the larger and middle-sized bronchial tubes, attended with an exudation forming a membraniform layer, which is closely adherent to the mucous surface; characterized by febrile reaction, cough, difficult breathing, scanty expectoration followed by the false membrane in the form of patches or casts.

Causes. Associated with membranous laryngitis from extension downwards; asthma; emphysema; phthisis; but most commonly the result of cold, damp and exposure, in those of strong and vigorous constitutions.

Pathological Anatomy. *Hyperæmia* of the mucous membrane of the bronchial tubes, associated with *swelling* and *adema*, during which the surface is covered with a whitish or grayish-white, firmly adherent, *membranous deposit*, cemented together by a coagulable exudation, and prolonged by rootlets from its under surface into the bronchial follicles, which sooner or later is loosened and detached by suppurative process and is expectorated after a violent fit of coughing or vomiting. When expectorated, the *false membrane*, as it has been termed, has either the form of patches or is thrown off entire from portions of the bronchial tube, and may be found to consist of casts representing more or less of the bronchial subdivisions and presenting an appearance not unlike "boiled macaroni."

On *microscopical examination*, the detached membrane presents fibrillæ which characterize fibrine or lymph in other situations, and if placed in a solution of acetic acid, it becomes greatly swollen, while ordinary mucus contracts and becomes more dense if added to a solution of acetic acid.

Symptoms. There are no symptoms or signs by means of which this variety of bronchitis can be distinguished from ordinary catarrhal bronchitis *prior to the expectoration of false membrane*.

Expectoration is preceded and accompanied by *violent paroxysms of coughing*, and after more or less of the membrane has been raised a muco-

purulent expectoration streaked with blood may be present for several days.

Duration. The inflammation may be either *acute*, *sub-acute*, or *chronic*, expectoration of patches or strips of the membrane being repeated at intervals of days, weeks, months, or even years.

Prognosis. In adults, favorable, if not associated with other grave affections, viz: phthisis, pneumonia, emphysema, etc. In young children, it may cause obstruction to the respiration, and not unfrequently proves fatal.

Treatment. As the character of the inflammation can seldom be determined until the membrane or portions of it have been expectorated, the treatment is at first the same as in cases of ordinary acute bronchitis.

As soon as the character of the inflammation can be determined, active *emesis* is the most effective means for removing the obstruction caused by the false membrane, the best agents of this class being either *hydrargyri sub-sulphas flavus* or *zinci sulph.*, to be repeated as *per* indications.

Inhalations of the vapor of water, and especially of *lime water*, are highly serviceable.

To prevent the formation of membrane Prof. Bartholow strongly urges the use of *ammonii jodidi cum carbonatis*, in small doses every hour or two, and in a case treated by the author after this mode, excellent results followed.

In cases showing a tendency to become chronic, good results will follow the application of fly *blisters* to the chest and the internal administration of *arsenicum* and *PIX LIQUIDA*.

CHRONIC BRONCHITIS.

Synonyms. Chronic bronchial catarrh; winter cough; secondary bronchitis.

Definition. A chronic inflammation of the mucous membrane of the larger and middle-sized bronchial tubes; characterized by cough and more or less profuse expectoration, plus, in many cases, the symptoms of *emphysema* of the lungs, which complicates the majority of cases.

Causes. The result of sub-acute or repeated and persistent attacks of acute bronchitis, cardiac diseases, Bright's disease, gout, and rheumatism.

Varieties. I. *Mucous catarrh*, associated with moderate expectoration. II. *Bronchorrhœa*, profuse expectoration. III. *Dry catarrh*, scanty expectoration.

Pathological Anatomy. The mucous membrane of the bronchial tubes is discolored, being of a more or less dull red, often of a deeply venous hue, mingled with a grayish or brownish color. These changes may be either in patches or extensively diffused. The vessels of the membrane are dilated. The mucous membrane is thickened, resulting in the reduction in the calibre of the tube and a roughening of its internal surface. The sub-mucous tissue becomes infiltrated, contracted and indurated.

The elastic and muscular coats of the tubes become hypertrophied, lose their elasticity, and the cartilages become the seat of calcareous deposits.

As the result of the loss of elasticity and muscular tone of the tubes they become irregularly *dilated*, "*bronchial dilatation*." The dilatations may be uniform in character, resembling somewhat the fingers of a glove, or they may be *sacculated* or *globular*, forming actual cavities in the bronchial structure.

In the *mucous variety* the secretion consists of young cells and mucous corpuscles, having a yellowish color; in the *dry variety*, the "*catarrh sec*" of Lænnec, or "*dry bronchial irritation*," the secretion is scanty, tough, semi-transparent, and occurs in defined globular masses; in *bronchorrhæa*, which is usually associated with bronchial dilatation, the secretion is abundant, greenish-yellow in color, and often fetid.

Symptoms. The most characteristic symptoms of chronic bronchitis are the *cough* and *expectoration*. Unless associated with other diseases, the general health suffers but little, if at all, constitutional symptoms being only present during acute exacerbations.

Mucous catarrh, or, from its occurring most commonly during the winter months, "*winter cough*," is characterized by paroxysms of cough, more or less violent, followed by the expectoration of a yellowish mucus.

Dry catarrh, is characterized by a harsh cough, a feeling of soreness or rawness under the sternum, and the expectoration of *small globular masses*.

Bronchorrhæa, which is associated with *bronchial dilatation*, and most common in the elderly, is characterized by paroxysms of severe coughing, followed by copious expectoration of greenish-yellow, often fetid, mucus.

Percussion. Unless complicated with other affections, *normal*, except when bronchial dilatation occurs, there are *diffused* spots of the *tympanitic* or *amphoric* percussion sound.

Auscultation. *Harsh*, or *vesiculo-bronchial* respiration associated with more or less profuse, *sonorous*, *sibilant* and *large* and *small bubbling râles*;

in *bronchial dilatation*, in addition to the harsh respiration, is found *broncho-cavernous respiration*, with large and small *gurgling râles*.

If *emphysema* complicate chronic bronchitis, the physical signs are somewhat modified, and will be pointed out when discussing that affection.

Prognosis. If unassociated with other diseases of the lungs or disease of the heart, chronic bronchitis is never dangerous to life, although the symptoms are present more or less continually, and aggravated upon the least exposure.

If associated with phthisis, emphysema, disease of the heart, or of the kidneys, the prognosis is governed by these affections.

Treatment. Cases of chronic bronchitis, of whatever variety, should observe the following general rules: 1. Attention to the general health. 2. The clothing; wearing the year round either flannel, or, what is better, silk under-clothing, taking care that the opposite extremes of too much clothing be not practiced.

The *medical treatment* is controlled by the *cause, character and severity* of the disease. If *secondary* to other affections, in the majority of cases, remedies directed to the bronchial mucous membrane are *contra-indicated*. If the result of the rheumatic or gouty diathesis, in addition to the remedies directed to the disease itself, should be combined change to a warm climate, if possible, and a more or less protracted course of *potassii iodidi* or *lithii citratis*, or a residence at some of the *alkaline springs*.

For mucous catarrh, with acute exacerbations—

R.	Ammonii muriat.....	gr. xv-xx	
	Vini pices.....	℥j.	M.

Three or four times in twenty-four hours.

Dry catarrh is greatly benefited by—

R.	Potassii iodidi.....	gr. v-x.	
	Ol. eucalyptus.....	gtt. j-v	
	Vini pices.....	℥j.	M.

Three times a day.

For *bronchorrhœa, copaiba*, gtt. v-x every three hours, or *spts. terebinthinæ*, gtt. v, every four hours, or *acidi carbolic*, gr. $\frac{1}{2}$, four times a day, and at the same time using *ol. morrhue* and *arsenicum*, or, if these means fail, inhalations of *aluminis*, *acid gallic* or *acid tannic*.

If the *expectoration be fetid*, "fetid bronchitis," Prof. DaCosta recommends internal use of *acidi carbolic*, gtt. j, every third hour, with *inhala-*
tions of *acidi carbolic*, gr. x, *aqua*, ℥j, two or three times a day.

ASTHMA.

Definition. A paroxysmal spasmodic contraction of the muscles surrounding the bronchial tubes, and perhaps associated with tonic spasm of the diaphragm, and more or less bronchial catarrh; characterized by spasmodic attacks of dyspnoea lasting some hours and terminating in health.

Causes. A true neurosis of the respiratory apparatus.

The result of peripheral or local disturbances in the nervous system, often hereditary; pressure on the pneumogastric nerves; dyspepsia and constipation, resulting in irritation of the end organs of the pneumogastric; inhalation of various substances, as ipecac, turpentine, etc.; climate; mental and moral influences. Asthma is more common in men than in women, in childhood and young adults than those of middle age and the old, in the well-to-do and wealthy than in the poor.

Symptoms. The *first attack* of asthma is *abrupt* and *sudden*, the succeeding attacks being preceded by *prodromes*, which the patients rapidly learn to appreciate, viz.: *coryza*, or *bronchial irritation*, or marked *dyspepsia*.

The *paroxysm* begins, in the majority of cases, in the *early morning hours* or during the *afternoon*, with a *feeling of anguish* and *constriction in the chest* and *intense desire for air*. The *breathing* is accompanied with *loud wheezing*, the *face is flushed*, at times even *cyanosed*, and *bathed in perspiration*, the *eyes stare*, the *eye-balls protrude*, and the muscles of the neck become prominent as they aid in the effort for air. The *dyspnoea* soon becomes so severe that the *inspiration is but a gasp*, the *lips are pallid*, *cyanosis deepens*, and the patient feels as if death were impending.

After some minutes or hours the *respiration* becomes *easier*, more air enters the lungs, the cyanosis disappears, and gradually the paroxysm ceases, the patient feeling exhausted and the chest fatigued.

The *duration* of an attack varies from three to ten hours. Instead of single paroxysms, slight remissions may occur at intervals of one, two or three hours, to be followed by exacerbations lasting from four to six hours, continuing for a week or two, preventing the patient lying down or taking food.

Percussion. *Hyper-resonant* over both lungs, termed *vesiculo-tympanitic*, the "bandbox tone" of Bamberger.

Auscultation. *First stage* feeble or absent vesicular murmur, with loud, wheezing, whistling, sibilant and sonorous râles; as the *paroxysm subsides* the vesicular *breathing* becomes more *normal*, associated with *moist râles*.

Prognosis. Of itself asthma is never fatal to life; but if the paroxysms are frequently repeated there results either *emphysema*, *cardiac dilatation*, with subsequent dropsy, or even cerebral hemorrhage.

Attacks of asthma frequently occur as a complication in emphysema, chronic bronchitis and valvular diseases of the heart.

Treatment. *Two indications.* 1. To relieve the paroxysm. 2. To prevent its recurrence.

To relieve the paroxysm, no medication is so effective as the *hypodermatic* injection of *morphia sulph.*, gr. $\frac{1}{6}$ to $\frac{1}{4}$, combined with *atropia sulph.*, gr. $\frac{1}{20}$; *chloral*, gr. x, repeated, where no heart complication, is often effective, or *amyl nitrat.* inhalations have been recommended; also *nauseant expectorants*, viz.: *lobelia*, *ipsecac*, *squills*, etc., or *ext. grindelia robusta fld.*, gtt. xx, repeated every two or three hours.

Inhalations of the fumes of belladonna, stramonium, nitre-paper, chloroform, ethyl bromid., or the use of various pastilles or cigarettes, are of immense benefit in many cases.

If an *attack* is *impending* it may often be aborted by drinking freely of strong *black coffee*, or by full doses of the *bromides*.

To prevent the recurrence of paroxysms, the general health must be strictly watched, any of the complications or causes of the attack treated, systematic exercise, bathing, regulated diet, and change of climate when possible.

Internally, good results are sometimes attained by a long course of *belladonna*, or *arsenicum*, or *potassii iodidi*.

HAY ASTHMA.

Synonyms. Hay fever; autumnal catarrh; rose cold.

Definition. An acute catarrhal inflammation of the upper air passages, extending to the bronchial tubes, with spasmodic contraction of their muscular layer; characterized by coryza, croupy or wheezy cough and difficult respiration.

Causes. An affection of the nervous system; often hereditary; mental impressions.

Persons in whom the predisposition exists have attacks excited by the inhalation of the pollen of grasses, rye, corn, wheat, etc.

Symptoms. Begins by severe *coryza*, with *sneezing*, a clear, watery, *nasal discharge*, congested eyes and Eustachian tubes, rapidly spreading to the *larynx* and *bronchial tubes*, when occurs a *hoarse, croupy* and wheezing *cough* and *difficulty of breathing*. The dyspnœa occurs in paroxysms, which are often as severe as those occurring during a regular asthmatic attack.

The paroxysms remit after a few days, returning again for several days or weeks, the bronchial catarrh persisting for a month or more.

The constitutional symptoms are mild, unless complications occur.

Complications. The affection may extend to the finer bronchial tubes (capillary bronchitis); congestion or œdema of the lungs and pneumonia are not infrequent.

Duration. Unless a change of climate is made, paroxysms of hay asthma continue more or less severe for six, eight or ten weeks of the year, each year the paroxysms growing more severe.

Prognosis. The affection never proves fatal in itself, but one or more of the following *sequelle* may follow: Asthma, chronic bronchitis or loss of the special sense of hearing or of smelling.

Treatment. An attack of hay asthma is often prevented by a *change of climate* during the season of the year when the attacks are most common, to wit, the *early autumn*. Any of the following locations may be selected: The White Mountains, Catskills, Adirondacks, Rocky Mountains, or a sea voyage.

Success has followed the use of *quinia*, gr. v, three times a day, beginning a month before the expected paroxysm. After the attack has fairly begun, *potassii iodidi*, gr. xv three times a day, seems to modify somewhat the severity of the paroxysms; or the following powder by *insufflation*:—

R.	Bismuth subnit.....	ʒ ij	
	Acid tannin.....	ʒ x	
	Iodoformi.....	gr.v.	M.

SIG.—Every three or four hours.

Cases accompanied with a profuse watery discharge have this symptom at least modified by minute doses of *atropia sulph.* with *morphia sulph.*, every three or four hours.

A long course of *arsenicum* in minute doses sometimes removes the susceptibility to the disease.

WHOOPIING COUGH.

Synonyms. Whooping cough; pertussis.

Definition. A convulsive, paroxysmal cough, consisting of a number of forcible expirations, followed by a series of deep, loud, sonorous inspirations (the whoop), repeated several times during each paroxysm, and associated with catarrh of the larger bronchi.

Causes. Chiefly a disease of childhood, one attack removing the susceptibility; contagious; the result of an unknown poison, perhaps atmospheric, affecting the nervous system.

Pathology. The changes, if any, occurring in the nervous system are unknown. It is said that "irritation of the internal branch of the superior laryngeal nerve produces relaxation of the diaphragm, spasm of the glottis and a convulsive expiration, the series of phenomena present in a paroxysm of asthma."

Hyperæmia of the mucous membrane of the nares, pharynx, larynx and bronchial tubes, with diminished *secretion*, followed by increased secretion of a transparent mucus, afterward becoming purulent, the mucous membranes afterward pale and anæmic.

Symptoms. Divided into three stages, to wit: *catarrhal*, *spasmodic* and *terminal*.

Catarrhal stage originates as an ordinary naso-laryngo-bronchial catarrh with a loose cough. *Duration* one to two weeks.

Spasmodic stage, the cough becomes *paroxysmal*, of a succession of short, rapid, expiratory efforts, the face becoming red, eyes swollen and protruding, the body bending forward, and where these expiratory efforts have exhausted the breath, they are followed by a deep, loud, crowing inspiration (*whoop*). Every paroxysm being composed of three such spells, the last one followed by the *expectoration* of a small amount of tough, viscid mucus.

The attacks of cough may be so severe as to cause vomiting, and if the vomiting is shortly after food has been taken, the nutrition of the patient will suffer. Profuse *epistaxis* is not unfrequent. *Duration* about four weeks.

Terminal stage. The paroxysms recur at longer intervals, are of less duration and intensity, the catarrhal symptoms being more marked, the expectoration more free. *Duration*, one or two weeks, often followed by the "cough of habit."

Complications. Congestion of the lungs, capillary bronchitis, pneumonia and emphysema, or, more rarely, convulsions, hydrocephalus, and rarely, apoplexy.

Prognosis. Depends upon the age and strength of the patient, the severity of the paroxysms, and the presence or absence of the complications. Ordinary cases, favorable. Moderately severe attacks during infancy are followed by head symptoms, while attacks occurring in adults are followed by chest symptoms.

Diagnosis. During the catarrhal stage, whooping cough cannot be distinguished from a common cold, but on the advent of the characteristic whoop the diagnosis is settled.

Treatment. Of the immense number and character of remedies recommended and employed for the cure of whooping cough, the author has obtained the best results with *ammoni. brom.*, gr. $\frac{1}{2}$ to iv, every three or four hours, according to age; in severe cases combined with *tinct. belladonnæ*.

The diet to be regulated, the clothing to be warm, but not too heavy, and the patient kept in the open air as long as possible.

EMPHYSEMA.

Synonym. Vesicular emphysema.

Definition. Dilatation of, or increase in the size and capacity of, the air vesicles, characterized by enlargement of the chest, difficulty of breathing, especially by exertion, associated sooner or later with dilatation of the heart.

Causes. The *predisposing* cause of emphysema is a hereditary nutritive derangement in the lung structure, often associated with a rigid enlargement of the thorax.

The *exciting* cause is the result of either a *too forcible* and long continued inspiration, the *theory of inspiration*, or the *excessive* mechanical distention of the vesicular walls by forced expiration, the *theory of expiration*.

What is known as *vicarious emphysema* is the dilatation of the air cells of the healthy portion of the lung, some other part being the seat of consolidation.

Interlobular emphysema is the presence of air in the space between the lobules of the lungs underneath the pulmonary pleura.

Pathological Anatomy. The situation of vesicular emphysema is, in the majority of cases, the *superior portions* of the chest, the *left side* more marked than the right.

An emphysematous lung feels remarkably soft to the touch, and upon cutting it, a dull, creaking sound is barely perceptible. The lung is of a pale red color, the vesicular walls are thinner and slighter, the vesicles are greatly enlarged, sometimes to the size of a pea or bean, and have an irregular shape, and traversing most of the large cysts (dilated vesicles) a few delicate bands, the remains of the lacerated inter-alveolar septa, are visible. With the destruction of the septa many of the capillaries are destroyed, whence the emphysematous tissue is remarkably bloodless and dry.

In consequence of the destruction of so many of the capillaries, the obstruction to the pulmonary circulation becomes so great that the pulmonary artery and right cavities of the heart are greatly distended; finally the muscular tissue of the heart undergoes granular followed by fatty degeneration. The distention of the veins results in a general venous stasis, to wit: nutmeg liver, congested kidneys, gastro-intestinal catarrh, etc.

Symptoms. The chief symptom of vesicular emphysema is *difficulty of breathing*, greatly aggravated on exertion, more or less *cough*, the result of an attending bronchitis, and the various symptoms resulting from *dilatation of the heart*. Shortness of breath is often aggravated, and the distress of the patient increased by paroxysms of asthma.

Inspection. The chest is rounded, the intercostal spaces wider, the vertical diameter elongated, with circumscribed prominence between the clavicles and nipples, often increased by the act of coughing—the peculiar “barrel-shaped” chest characteristic of this disease.

The character of the respiratory movements is also marked, there being but slight movement observed on even forcible respiration, the chest having the constant appearance of decided inspiration.

Palpation. The vocal fremitus is diminished, and the cardiac impulse depressed and nearer to the sternum.

Percussion. The *resonance is increased* (hyper-resonant) over all the emphysematous portions, and if the whole lung is involved, extends to the seventh or eighth rib anteriorly, and to the twelfth rib posteriorly. The hepatic dullness may not begin until the inferior margin of the ribs is reached; the cardiac dullness is lessened, on account of the emphysematous lung nearly covering the heart.

Auscultation. The vesicular murmur is *weakened* and in pronounced

cases almost *absent*. If bronchitis be present the inspiratory sound may be rough or sibilant in character, but its duration is always shortened. *Expiration is always prolonged*, and if bronchitis be present, may be associated with more or less pronounced moist or *bubbling râles*.

The *first sound* of the heart is lessened in intensity and duration, the *second sound* being sharply accentuated.

Prognosis. Vesicular emphysema is essentially a chronic disease. In itself it rarely proves fatal, but if aggravated, from any cause, or if associated with frequent or prolonged asthmatic paroxysms, the cardiac changes are hastened, general dropsy supervenes, death occurring from exhaustion, or, more commonly, the result of intercurrent attacks of pneumonia.

Diagnosis. *Bronchitis* is distinguished from emphysema by the absence of dyspnoea, hyper-resonance of the chest, changes in its shape, size, and movement, and the disturbances of the circulation.

Spasmodic asthma by the paroxysmal character of the affection, emphysema being a permanent malady with attacks of asthma.

Cardiac diseases due to other causes than emphysema do not have the characteristic physical signs of that affection.

Treatment. It being impossible to restore the altered lung structure, the indications for treatment are to relieve the *symptoms* and to endeavor to prevent the *progress* of the affection.

For the *relief* of the asthmatic paroxysms may be used *morphia* combined with *atropia* hypodermatically, or *ext. quebracho fld.*, ʒ ss-j every hour until relief, or large doses of *potassii bromidi*, frequently repeated.

To *prevent the progress* of the affection, remove the bronchial catarrh, relieve the difficulty of breathing, and strengthen the cardiac action, no one combination seems to compare with the following:—

R.	Potassii iodidi.....	gr. v	
	Strychniæ sulph.....	gr. $\frac{1}{10}$	
	Liq. potassii arseniat.....	℥v	
	Aq. lauro-cerasi.....	f ʒj.	M.

SIG.—Four times a day.

But of all means hitherto proposed for the relief of emphysema, nothing has approached the *inhalation of compressed air* by means of the apparatus of Waldenberg.

For the *dropsy* arising from failure of the heart to compensate for the circulatory derangement of the lungs, it may be relieved for a time by the use of *digitalis*, or, if this fails, *scilla* combined with *hydragogue cathartics*.

CONGESTION OF THE LUNGS.

Synonym. Hyperæmia of the lungs.

Definition. An increase in, or abnormal fullness of, the capillaries of the air cells; *active* when the result of an accelerated circulation; *passive* when caused by an impeded outflow from the capillaries.

Causes. *Active.* Increased cardiac action; over bodily exertion; alcoholic excesses; mental excitement; inhalation of cold or hot air.

Passive. Dilated heart; valvular diseases; low fevers (hypostatic congestion); Bright's disease.

Pathology. The hyperæmic lung has a bloated, dark red appearance, its vessels are distended to the uttermost, the tissues succulent and relaxed, blood flowing freely over cut surfaces; a bloody, frothy liquid is present in the bronchi, and the alveolar walls are so much swollen that the condensed lung shows scarcely any indication of its cellular structure, resembling the tissue of the spleen (*splenification*).

Symptoms. *Active.* Rapidly developing oppression of the chest and difficulty of breathing, flushed face, strong, full pulse, throbbing carotids and congested eyes, with a short, dry cough, followed by scanty, frothy expectoration slightly streaked with blood.

Passive. Developed slowly, with difficulty of breathing, blueness of the surface, almost continuous hacking cough, followed by scanty, blood-streaked expectoration.

Percussion. The resonance of the lungs slightly diminished, the quality of the sound being somewhat tympanitic.

Auscultation. The vesicular murmur is diminished and accompanied with *sub-crepitant râles*.

Duration. *Active.* Usually from three to five days, terminating either by resolution, hemorrhage, or rarely, pneumonia. The onset may be so complete and sudden that death soon occurs.

Passive. Developed slowly and subject to great variations, depending on the cause.

Prognosis. An acute congestion of the lungs may prove fatal within a few hours, but under proper treatment it generally terminates favorably.

The passive form is controlled entirely by the cause.

Diagnosis. Active congestion of the lungs cannot be distinguished from the stage of engorgement of a true pneumonia, in the majority of cases.

Treatment. *Active.* In the strong and vigorous *wet cups* to the chest, or, if the symptoms are pronounced, a general *venesection*. *Internally*, *tinct. aconit.*, gr. j–ij every hour as indicated, with *free purgation*.

Passive. *Dry or wet cups* over the chest, *hydragogue cathartics*, and the internal administration of *digitalis*.

CEDEMA OF THE LUNGS.

Definition. An effusion of serum upon the free surface of the lung, viz.: in the pulmonary vesicles; characterized by dyspnoea, cough and frothy, blood-streaked expectoration.

Causes. Increased cardiac action; over bodily exertion; alcoholic excesses, mental excitement; inhalation of cold or hot air.

Pathology. The lung tissue swollen and not collapsing when the chest is opened. The elasticity of the tissue has disappeared, and it pits on pressure.

If following hyperæmia of the lungs it is red in color; if one symptom of a general dropsy, its color is pale.

Cut into the œdematous spots and an enormous quantity of liquid, sometimes clear, at other times of a red color, mixed more or less with blood, flows over the cut surface. The liquid is filled with bubbles, is frothy, from being copiously mixed with air, providing the air cells have not been entirely filled with serum, thereby excluding the air.

Symptoms. Following a more or less rapidly developing hyperæmia of the lungs are *great difficulty* and *extreme rapidity of breathing*, with a strong sense of *oppression*, great *anxiety*, *rapid* and tumultuous *cardiac action*, throbbing carotids and temporals, fullness of the head and headache, flushed face and congested eyes, with a *constant, short cough*, with the expectoration of a *tough, frothy mucus*, streaked with *blood*.

If the effusion into the air cells is sufficient to prevent the entrance of air, symptoms of *cyanosis* rapidly supervene, the *pulse* becoming *feeble*, the *surface cold*, the *breathing shallow* and hurried, the *cough suppressed*, *stupor* replacing the restlessness, soon deepening into *coma*.

Auscultation. The vesicular murmur is supplanted by *sub-crepitant* and *bubbling râles*.

Prognosis. Œdema of the lungs is always a serious malady and frequently, unless promptly relieved, terminates fatally.

Diagnosis. *Pneumonia* in the earlier stages is the only condition likely to be confounded with œdema of the lungs, and the subsequent course of the two maladies soon determines the diagnosis.

Treatment. If the œdema be of an active kind, prompt *blood-letting*, either by *venesection* or *wet cups* to the chest, is indicated.

The *internal* administration of *tinct. aconit.* gtt. j-ij, repeated every fifteen minutes, until the cardiac action is markedly reduced, when every hour or two, with the use of the preparations of *ammonia*, either the carbonate or iodide, to liquefy the effusion, produces marked relief.

The above means may be aided by *counter-irritation* to the chest, *hot mustard foot-baths*, and active *saline purgatives*.

HÆMOPTYSIS.

Synonyms. Bronchial hemorrhage; broncho-pulmonary hemorrhage; bronchorrhagia.

Definition. The expectoration of pure or unmixed blood, usually of a bright red color, following the act of coughing.

Causes. In the majority of cases, the result of *tubercular* deposition in the walls of the minute bronchial arteries; excessive cardiac action; excessive bodily exertion, straining, lifting, running, etc.; a symptom of *hamophilia* ("bleeder's disease").

Pathological Anatomy. Hæmoptysis rarely causes death in itself, so that few opportunities for observing post-mortem appearances are obtained, and when they do occur, the location of the hemorrhage is seldom found.

The air passages are more or less filled with clotted blood, the mucous membrane swollen, and of dark red color, rarely, pale and bloodless. The air cells contain blood clots, or else are distended with air, the bronchi being filled with clots preventing its egress. Unless the clots are rapidly removed by expectoration or absorption, a secondary inflammation originates around them.

Symptoms. "Spitting of blood" occurs suddenly; rarely, it is preceded by epistaxis, palpitation and some difficulty of breathing.

It begins with a sensation of *warmth* under the sternum, *tickling* in the throat, a *sweetish taste* in the mouth, which, on attempting to remove by the act of coughing, a *warm, saltish, bright red frothy liquid* gushes from the mouth and nose. The quantity of blood raised varies from an ounce to a pint. The appearance of the blood depresses the subject, he becoming *pale, tremulous*, often *fainting*.

The attack may subside within half an hour to several hours, returning for several days, in the meantime the expectoration being either bloody or streaked with blood.

A slight febrile reaction, with chest pains, supervenes upon the hemorrhage, the result of the inflammation at the site of the bleeding, which soon subsides except where blood clots develop a secondary pneumonia, which may undergo the cheesy metamorphosis.

Auscultation. *Coarse, bubbling râles* are discerned in circumscribed portions of the chest.

Prognosis. Hæmoptysis in itself rarely terminates fatally, although causing much depression; the patient rapidly recovers, unless secondary pneumonia results. In nine cases out of ten it is the prognostic sign of *phthisis*.

Diagnosis. From *epistaxis*, or hemorrhage from the posterior nares, it is distinguished by the absence of air bubbles and inspection of the fauces.

Hæmatemesis, or hemorrhage from the stomach, differs from hæmoptysis in that the blood is *vomited* instead of expectorated, commonly of a *dark color, clotted*, mixed with the acid contents of the stomach, followed with black, tar-like stools and the *absence of râles in the chest*.

Exceptions to the above occur when the blood from the lungs is first swallowed and afterwards raised by vomiting, or when the hemorrhage in the stomach is caused by the erosion of a large artery, the result of ulcer of the stomach; in these cases, however, the raising of blood is preceded by epigastric pain, and the blood not frothy.

Treatment. *Perfect rest in bed*, the head and shoulders elevated, and perfect quiet, the diet to be bland, the drinks cool, the patient slowly swallowing small particles of ice. *Common salt*, slowly dissolved in the mouth, is a popular remedy, which, if it does no good, serves to occupy the attention of the patient and friends until medical advice is obtained.

The hypodermatic injection of *ergotin*, gr. x-xxx, or the internal administration of *ext. ergot fld.*, or—

R.	Acid gallic.....	gr. xv	
	Acid sulph. dil.....	℥x	
	Aquæ cinnamom.....	℥iv.	M.

Repeated every fifteen or twenty minutes.

Or *tinct. matico*, ℥j, or alum, gr. xx, frequently repeated.

If the hemorrhage causes great nervous excitement or depression, *opium*, either hypodermatically or internally, to quiet the patient, is indicated.

Inhalations, by means of the steam atomizer, of either *Monsell's solution* or *tinct. ferri chlor.*, are recommended when the above means fail.

Prof. DaCosta recommends for frequent small hemorrhages, continuing day after day, *cupri sulph.*, gr. $\frac{1}{2}$, ext. opii, gr. $\frac{1}{2}$.

CROUPOUS PNEUMONIA.

Synonyms. Lobar pneumonia; pneumonitis; lung fever; winter fever.

Definition. An acute croupous inflammation involving the vesicular structure of the lungs, rendering the alveoli impervious to air; characterized by fever, pain, dyspnoea, cough, rusty sputum and great physical prostration.

Causes. The question of pneumonia being a constitutional disease is *sub judice*. It is most common in winter, at times occurring *epidemicallly*, the result of atmospheric conditions; exposure to draughts and cold; injuries to the chest walls; alcoholic excesses; gout or rheumatism.

Pathological Anatomy. The inflammatory changes most commonly affect the lower right lobe, rarely, the upper lobe, very rarely, corresponding lobes in both lungs.

The changes are, I. *Hyperæmia* (engorgement); II. *Exudation* (red hepatization); III. *Resolution* (yellow hepatization); or it may undergo purulent transformation (gray hepatization).

I. *Stage of hyperæmia* or engorgement consists in the vessels of the alveoli being distended to their utmost, encroaching upon the cavity; the lung has a reddish-brown color, is heavier, sinking somewhat lower in water than a normal lung, with a slight exudation upon the vesicular surface. The same changes are perceived in the adjacent bronchioles.

II. *Stage of exudation*, consists in the exudation of a viscid, fibrinous fluid, admixed with white and red corpuscles and blood, which rapidly coagulates, firmly enclosing the corpuscles and completely filling the alveoli. When the exudation and coagulation are completed, the lung is red, sinks at once when placed in water, and its elasticity is destroyed. When cut into, the color, density and granular appearance so closely resembles the cut surface of a section of the liver that Lennec termed it *red hepatization*.

III. *Resolution*, or yellow hepatization, follows the above condition in the majority of cases, the coagulated albuminous exudation undergoing

liquefaction and absorption, the cellular element undergoing a fatty degeneration, the greater part being absorbed, the remainder expelled during acts of expectoration, the alveoli returning to their normal condition both as to capacity, function and elasticity.

If resolution is retarded and portions of the coagulated exudation undergo *purulent transformation*, changing to a yellowish then greenish-yellow color (gray hepatization), pus cells are rapidly formed, the part becoming a granular, fatty mass. The portions of the lung not undergoing this purulent transformation retains the reddish color with intermixed yellowish patches, the lung structure proper remaining intact. The purulent contents may be ejected in part, the remainder undergoing fatty degeneration and finally absorption.

Abscess of the lung may result from the lung structure becoming involved in the purulent disintegration. Abscesses may be solitary or in great numbers, which by disintegration of intervening structure form one or more large abscesses; these abscesses either terminate fatally or open into the pleural cavity, cause *emphysema* and exhaustion, or open into the bronchi and are expectorated, or an *interstitial pneumonia* is set up and the abscess encapsulated in a firm cicatricial tissue.

Gangrene of the lungs may result from blocking up of the bronchial arteries or pulmonary arteries by coagulum during any stage of the disease.

The uninflamed portions of the lungs are hyperæmic and their functional activity is increased.

Death sometimes results from a *general œdema* of the unaffected lung, such cases being often erroneously termed "double pneumonia."

Symptoms. Begins by severe and prolonged *chill* (in children convulsions), followed by rapid *rise of temperature*, 103° - 105° F., strong, full, *rapid pulse*, either a *dull or sharp pain*, aggravated by pressure, breathing or coughing, *shortness of breath*, the number increasing to 40, 50, or more per minute, causing *interrupted speech, cough*, first short, ringing and harsh, soon followed by a scanty, *rusty* sputum, tough and adhesive, becoming more copious and of a yellow color as the disease advances. There are present headache, sleeplessness, rarely delirium, save in drunkards, gastric disturbances and scanty, high-colored urine with *diminished chlorides*.

The above symptoms continue more or less marked until either the *fifth, seventh, ninth or eleventh* day, when a *crisis* occurs, and within twenty-four hours convalescence is established, recovery rapidly following.

Typhoid pneumonia is a term applied to those cases which are accompanied by signs of *extreme prostration*, very *high temperature* and profuse and *prolonged exudation*. They may also terminate by a *crisis*. *Bilious pneumonia* are cases accompanied with *congestion of the liver*, the result of venous stasis from pulmonary obstruction or from an accompanying *acute catarrhal jaundice*. In malarial districts pneumonia and malaria are frequently associated, when jaundice, more or less pronounced, occurs. Such cases are termed *malarial pneumonia*.

If purulent infiltration follows the stage of red hepatization, instead of a crisis, there occur symptoms of exhaustion, with profuse expectoration, etc. Pneumonia occurring in persons of *intemperate* habits usually begins with symptoms closely resembling an attack of *delirium tremens*, cough, expectoration and pain being very slight or even absent.

Inspection. *First stage*, deficient movement of the affected side, due to the pain. *Second stage*, the healthy side rises normally, the affected side lagging behind. If both lower lobes are impervious to air, the diaphragm cannot descend and the epigastrium does not project during inspiration, the breathing being conducted by the upper part of the chest (superior costal).

Palpation. *First stage*, the *vocal fremitus* more distinct than normal. *Second stage*, the vocal fremitus is markedly *exaggerated*, except in those rare instances of occlusion of the bronchi by secretion.

The *cardiac impulse* is felt in the normal position.

Percussion. *First stage*, the percussion note is slightly *impaired*; indeed, at times having a hollow or tympanitic quality. *Second stage*, *dullness* over the affected parts, with an increased sense of *resistance*.

Auscultation. *First stage*, over affected part *feeble vesicular murmur*, associated with the true vesicular or *crepitant* (crackling) *râle*, most distinct during inspiration. *Second stage*, harsh, high-pitched *bronchial respiration*, at times resembling a to and fro metallic sound, except in those rare instances in which the bronchi are more or less filled with secretion. *Bronchophony*, or distinctly transmitted voice, at times *pectoriloquy*, or distinct transmission of articulated sounds. *Third stage*, breathing changing from bronchial to *vesiculo-bronchial*, the *crepitant* (crepitatio redux) *râle* returning, and if resolution proceed the breath sounds are associated with *large* and *small moist* and bubbling *râles*.

Terminations. Asthenic cases recover within two weeks. When purulent infiltration supervenes, the disease pursues a tedious course of several weeks' duration, with a low exhaustive fever.

If death occurs during the first or second stages it is usually the result of a *collateral œdema* of the uninflamed lung.

Death in the third stage is the result of exhaustion. It is especially trying for the weak, the aged or drunkards.

If *abscesses* occur, have exhausting sweats, frequent cough, with a large amount of yellowish-gray, at times blood-streaked, expectoration.

Gangrene of the lungs is a rare termination, and is associated with intense collapse and the expectoration of a blackish fetid sputum, and associated with the physical signs of a cavity.

Diagnosis. *Edema of the lungs* may be confounded with the first stage of pneumonia, but the subsequent history, its presence on both sides, and the waterish expectoration and absence of the physical signs of pneumonia soon determine the diagnosis.

Pleurisy is more often confounded with pneumonia than any other disease, the points of distinction between which will be pointed out when discussing that affection.

Prognosis. Depends upon the extent of the inflammation, double pneumonia being very grave, but not near so frequent as was at one time supposed. A temperature of 106° F., and a pulse above 120 are of bad omen. Pneumonia of drunkards almost invariably terminates fatally. Typhoid pneumonia, the so-called bilious pneumonia, purulent infiltration, abscesses of the lungs and gangrene, all give a grave prognosis.

Treatment. *First stage*, wet or dry cups over the chest, followed by the application of poultices. Internally *tinct. verat. virid.*, gtt. j–ij, or *tinct. aconiti*, gtt. ij–iv, repeated every half hour or hour, until a decided impression is made upon the circulation, and at the same time *quinia*, gr. v, every three or four hours. If the patient be strong and vigorous, the circulation strong, the arterial tension high, the dyspnoea early and marked, the surface flushed, marked relief is obtained by a good *venesection*.

Second stage, the arterial sedatives should be replaced by *quinia*, gr. iij, every three hours, and *ammonii carb.*, gr. v, every two hours, and a good nutritious diet. Local applications are useless at this stage.

Third stage, *ammonii carb.*, gr. v, every three hours, *quinia*, gr. xij–xx, during the day, *nutritious diet*, *stimulants*, and if the hepatization shows signs of lingering, *flying blisters* over the chest.

For typhoid pneumonia, purulent infiltration, abscess of the lungs, or pneumonia in drunkards, the weak or aged, *quinia*, *ferrum*, strong, *nourishing diet*, bold *stimulation*, and the free use of *ammonii carb.*, are the indications.

CATARRHAL PNEUMONIA.

Synonyms. Broncho-pneumonia; lobular pneumonia; capillary bronchitis(?).

Definition. An acute catarrhal inflammation of the bronchioles and alveoli of the lungs; characterized by fever, cough, dyspnœa, copious expectoration and great depression.

Causes. From an extension of a bronchial catarrh downwards; following exanthemata, measles and whooping cough. Persons of the rickety or scrofulous diathesis, in whom there is a greater irritability of the epithelial elements, are particularly predisposed to this form of pneumonia on slight exposure; emphysema; diseases of the heart; childhood and old age.

Pathological Anatomy. *Hyperæmia* of the mucous membrane of the bronchii, and also of the bronchioles and air cells, with *swelling* and *succulence* of these tissues, accompanied by *abnormal secretion* and an immense *production of young cells* from a proliferation of the bronchial and alveolar epithelium, admixed with a yellowish, creamy, mucoid material, which blocks up the bronchioles and air cells.

The affected parts first have a reddish-gray, soon changing to a yellowish-gray color, due to the rapid metamorphosis of the newly developed cells. If the fatty change be completed, absorption takes place, and the consolidation is removed; if it remains incomplete the cells atrophy, the little mass becoming caseous, and the disease passes into a chronic stage.

The bronchial tubes also participate in the disease, the walls of the air tubes become thickened, from a hyperplasia of the connective tissue, and their calibre often dilated.

Symptoms. Catarrhal pneumonia is preceded by catarrhal bronchitis. Its onset is announced by a *rise of temperature*, 102° – 103° F., *rapid*, laborious and shallow *breathing*, as shown by the widely dilated nares and violent action of all the accessory muscles, while the insufficient distention of the lungs is shown by the great recession of the lower part of the chest walls and sinking in of the intercostal spaces. The *inspirations* are short and imperfect, the *expiration* noisy and prolonged; the *pulse* is *frequent* and somewhat compressible; the *cough*, which, during the bronchitis, was loose, now becomes *short, hacking*, dry and *painful*, soon followed by more or less *copious muco-purulent expectoration*; the appetite is impaired, bowels somewhat loose, urine scanty, high-colored, the surface frequently covered with a more or less copious perspiration.

The progress of catarrhal pneumonia is sometimes, although not often, a very acute one. The disease may prove fatal in a few days, especially if it attacks feeble children, in such the countenance becoming pale and livid, the lips bluish, the eyes dull, and restlessness giving place to apathy and a continually augmented somnolence.

Resolution, when it occurs, is by *lysis*, several weeks elapsing before complete recovery.

Percussion. *Dullness*, scattered in patches, over both lungs, the intervening healthy lung often giving a more or less *hollow* or *tympanitic* note.

Auscultation. *Vesiculo-bronchial* breathing, changing to moist bronchial breathing, associated with *small bubbling* (sub-crepitant) *râles*. As the disease progresses towards resolution, the *râles* become larger (large bubbling) and more copious. If pneumonic phthisis results, physical signs indicative of that condition are soon evident.

Sequellæ. Attacks of catarrhal pneumonia complicated with atelectasis, or collapse of the lobules, when recovery occurs, are followed by emphysema of the lungs.

If the catarrhal products which fill the alveoli and bronchioles and intervening connective tissue do not rapidly undergo complete fatty metamorphosis and consequent absorption, in the majority of cases *pneumonic phthisis* results.

Prognosis. Fully one-half of the cases of true catarrhal pneumonia terminate fatally. The prognosis must be guarded for scrofulous or rachitic subjects, or those enfeebled by other diseases, as, unless prompt resolution can be effected, it will terminate fatally early or run into pneumonic phthisis.

Diagnosis. *Ordinary bronchial catarrh* differs from catarrhal pneumonia by the absence of dyspnoea, fever, and dullness on percussion, and the presence of the large bubbling *râles*, and also by the subsequent history of the two affections.

Croupous pneumonia is a unilateral disease; catarrhal pneumonia is bilateral and diffused over both lungs; the former a self-limited disease, the latter having no fixed duration.

Acute tuberculosis at its onset is characterized by the presence of a capillary bronchitis, a differentiation being possible only by a study of the clinical history and course of the two diseases.

Œdema of the lungs is a bilateral disease associated with a short, dry cough and dyspnœa, but lacks the previous catarrhal history and high temperature of catarrhal pneumonia.

Treatment. Confinement to bed, repeated application of *weak mustard poultices* to the chest and back, and the internal administration of *tinct. aconite* gtt. j-ij, or *infus digitalis* ℥ j-ij, if the fever be high, combined with *ext. ipecac fld.* in a simple saline mixture, viz.: *liq. ammon. citratis*. As the swelling of the mucous membrane becomes less and the secretion more free, one of the following prescriptions produce great relief:—

R. Ammon. carb.....	gr. v	
Mucil. acaciæ.....	q. s	
Acet. scillæ.....	℥ xx	
Tinct. opii camph.....	℥ ss	
Ext. glycyrrh. pulv.....	gr. iij	
Syr. tolu.....	℥ ij.	M.

Every three or four hours; or—

R. Syr. scillæ,		
Syr. ipecac,		
Syr. senegæ,		
Ext. opii camph.....	℥ ss	
Syr. prun. virg.....	℥ ij.	M.

Every three or four hours.

Quinia, gr. ij-iv, every three hours, should be administered from the onset; the diet should be nutritious, but easily digestible, milk and broths being the best, *stimulants* used only as per indications. The air of the apartment should be moistened by disengaging the vapor of water in it.

If symptoms of pulmonary collapse occur, as are shown by cyanosis and increased difficulty of breathing, *emetics*, of which *hydrargyri subsulphas flav.* (turpeth mineral) should be used and repeated whenever indications call for its use.

PNEUMONIC PHTHISIS.

Synonyms. Chronic catarrhal pneumonia; catarrhal phthisis; caseous pneumonia; caseous phthisis.

Definition. A form of destruction of the pulmonary tissue caused by the *caseation* or cheesy degeneration of inflammatory products in the lungs and the subsequent softening and destruction of the caseous matter, with greater or less destruction of the pulmonary tissue; characterized by hectic fever, cough, purulent expectoration, and more or less rapid prostration.

Causes. The *predisposing* factor in the etiology of pneumonic phthisis is a strumous or scrofulous diathesis, or a state of lowered health, the result of various bad hygienic influences. The *exciting* causes are catarrhal pneumonia in any portions of the lungs, but especially the apex; inflammation occurring about a blood clot; inhalation of irritant particles in certain occupations, viz.: weaving, grinding, mining, etc.

Pathological Anatomy. When pneumonia terminates in resolution the inflammatory products are absorbed. If the fatty metamorphosis be incomplete, the cells are atrophied and undergo the caseous degeneration, which consists in the absorption of the watery parts and the fatty degeneration of the cellular elements and granular disintegration of the fibrinous material, so that ultimately a soft, solid mass is produced, yellowish in color, but having the appearance of cheese.

The destructive changes are thus described by Niemeyer: "Cells, the products of inflammation, accumulate in the alveoli and minute bronchi, crowd upon each other, becoming densely packed, and thus by their mutual pressure they bring about their own decay, as well as that of the lung textures, by interfering with their nutrition, the alveolar walls being also themselves damaged by the inflammatory process." The morbid materials therefore become caseous, and may undergo calcification or absorption, or be ultimately discharged, giving rise to cavities.

The position of the catarrhal pneumonia resulting in the above changes is usually at the apex, but it may occur at any portion of the lungs, or a whole lung becomes infiltrated, and undergoes the cheesy degeneration (phthisis florida).

In many cases tubercle is deposited in the inflamed lung, hastening the destruction and formation of cavities.

Symptoms. Pneumonic phthisis occurs in three forms, to wit: *chronic*, *sub-acute* and *acute*.

Chronic form. The origin is rather insidiously, the subject being susceptible to cold on the slightest exposure; gradually a *persistent cough* with the *expectoration of muco-pus* is established, each severe cold being accompanied with *chills*, *fever*, *pain* in the chest, either slight *hemorrhages* or *blood-streaked sputa*. Finally the attacks become persistent with morning *chills*, evening *fevers* and rather profuse *night sweats*, great weakness and exhaustion, loss of appetite and feeble digestion, the symptoms growing persistently worse, *death* occurring from *exhaustion* after one or two years' duration.

Sub-acute variety. History of an acute attack of pneumonia of one or two weeks' duration, followed by a decided improvement. After some weeks or months symptoms of *softening* begin, destroying the lung structure and forming cavities, accompanied with *chills, fever, night sweats, emaciation, cough, muco-purulent and blood-streaked expectoration*, the patient dying by exhaustion within a year.

Acute variety, the so-called *phthisis florida*, runs a rapid course, begins as a catarrhal pneumonia, involving the whole of one or part of two lungs, by rapid *loss of flesh and strength, high but variable temperature, 103°–105° F.*, with remissions, profuse *night sweats, shortness of breath, severe cold, profuse, purulent and blood-streaked sputa, loss of appetite, feeble digestion*, rapid emaciation, the patient succumbing in a few weeks or months, from exhaustion.

A decided remission in the local and general symptoms of the acute variety may occur, the disease afterward pursuing a more chronic course.

Inspection. Shows *deficient respiratory movements* of the diseased portion of the lungs.

Palpation. *Increased vocal fremitus* over the consolidated lung tissue and cavities.

Percussion. The percussion note varies from a slight *impairment* of the normal note to *dullness*, and when cavities are formed, associated with scattered points of the *tympanitic or hollow* note. If the cavities communicate with a bronchial tube the *cracked-pot* or *cracked-metal* sound is elicited. If the cavities are filled with pus the percussion note is *dull*. If the pus be expelled the tympanitic or cracked-pot sound returns.

Auscultation. The vesicular murmur is unimpaired in those parts free from disease; it is *feeble* or indistinct if many bronchioles are obstructed; it is *rude or blowing* if the bronchioles are narrowed. The *inspiratory* sound will be *jerking*, and the *expiratory* sound *prolonged and blowing* when the lung has lost its elasticity.

Associated with impaired vesicular murmur is a *fine, dry, crackling sound* (crepitation), appearing at the *end of inspiration*. If bronchitis be associated, large and small *moist or bubbling râles* are heard during respiration.

When cavities form, either *bronchial* or *broncho-cavernous* respiration is heard, associated with more or less distinct *gurgling râles*. If the cavity be free from pus and have rather firm walls, the breathing is more *amphoric* in character.

Prognosis. *Acute* variety, so-called phthisis florida, usually terminates fatally within a few months.

The *sub-acute* and chronic forms may, under judicious treatment and favorable hygienic conditions, be arrested, the caseous matter partly expectorated and partly absorbed, with more or less loss of tissue, cicatricial tissue supplying its place, which, after a time, contracts, causing more or less retraction of the chest walls. The usual termination, however, is fatal, in from two to three years.

Diagnosis. *Catarrhal bronchitis* has many points of resemblance to pneumonic phthisis. The subsequent course of the latter, high temperature, prostration and emaciation, should prevent error.

Tubercular phthisis is often confounded with pneumonic phthisis, an error difficult to prevent in many cases.

Treatment. An attempt should always be made to remove the caseous matter by absorption and expectoration. The following prescriptions will sometimes prove successful:—

R.	Ammon. carb.....	gr. v	
	Ammon. iodidi.....	gr. v-x	
	Syr. tolu.....	℥ ij	
	Syr. prun. virg.....	℥ ij.	M.

Every five hours, alternating with

R.	Liq. potass. arsenitis.....	℥ v	
	Mass. ferri carb.....	gr. v	
	Vini xerici.....	℥ j	
	Aqua.....	℥ iiij.	M.

The diet should be the most nutritious possible, clothing warm, and, if practicable, change of residence should be made to a dry and elevated climate. If the digestion will permit, *ol. morrhue* ℥ j-ij, three times a day.

For the *fever*, *quinia*, gr. xv-xx, is more successful than the combination of quinine and digitalis in small doses.

Night sweats are best controlled by *atropia sulph.* gr. $\frac{1}{80}$ at bedtime, or

R.	Extract belladonnæ.....	gr. ss	
	Zinci. oxidi.....	gr. iiij.	M.

At bedtime.

For the *cough* and *sleeplessness*, *codeia sulph.* gr. ss-j p. r. n.

TUBERCULAR PHTHISIS.

Synonyms. Tuberculosis; consumption; incipient phthisis.

Definition. The deposition of tubercle in the lung structure, which undergoes softening, followed by more or less loss of the tissue proper; characterized by fever, cough, dyspnœa, emaciation and exhaustion.

Causes. Chiefly hereditary; closely associated with scrofula and struma; probably contagious under certain conditions; secondary to catarrhal (caseous) pneumonia; the theory of "*bacillus tuberculosis*" of Koch is *sub judice*.

Pathological Anatomy. Tubercle is a grayish-white, translucent and semi-solid granulation, about the size of a millet seed, most commonly deposited in the walls of the bronchioles, exciting a low form of inflammation, the result of its own death. The masses of tubercle soon undergo softening (cheesy transformation); the lung structure is secondarily affected, undergoes softening, which results in more or less destruction of the tissue, whence cavities are formed.

The inflammation may extend to the small arteries, causing hemorrhage.

The deposit of tubercle is most general at one of the apices, soon spreading to other parts; depositions may also occur in the brain, intestines and liver.

The pleura is usually the seat of a chronic inflammation, resulting in the obliteration of the cavity.

The larynx suffers from extensive tubercular ulcerations, causing more or less destruction of the parts.

Symptoms. The symptoms correspond closely to the stages of *deposition*, of *softening*, and of the *formation of cavities*.

The development is *insidious*, with increasing *dyspepsia*, *irritable heart*, a light, dry, hacking *cough*, referred to the throat or stomach, scanty, glairy *expectoration*, gradual *loss of weight*, impaired muscular *strength* and *pallid look*, more or less copious hæmoptysis often following. *Pain*, sharp in character near the clavicles, is often present.

The *beginning of softening* is announced by increased *cough*, freer *expectoration*, *dyspnœa* increased on exertion, morning *chills*, evening *fever*, *night sweats*—the so-called hectic fever, *diarrhœa*, increased *emaciation* and *weakness*, the patient, however, continuing very hopeful.

With the *formation of the cavities*, the *cough* is more aggravated, with profuse and purulent *expectoration*, at times containing yellow striæ, the

amount depending upon the number and size of the cavities; hæmoptysis not common at this stage; the *pulse* rapid and weak; *increased hectic*; burning of the soles and palms; copious *night sweats*; greater debility and *emaciation*, with *œdema* of the feet and ankles, denoting failure of the circulation; death soon following from asthenia; the mind clear and hopeful to the last.

Inspection. *First stage* often shows slight *depressions* in the supra-clavicular, and at times in the intra-clavicular regions.

Palpation. *Second stage*, the vocal *fremitus* is slightly *increased*.

Percussion. *First stage*, slight *impairment* of the normal percussion resonance can sometimes be elicited. *Second stage*, the resonance is *impaired*, or even *dull*. *Third stage*, *dullness* with circumscribed spots of the *amphoric*, or *tympanitic* or *cracked-pot* sound.

Auscultation. *First stage*, *inspiration jerky*, *expiration prolonged*, the pitch higher than normal, inspiration associated with *crackling râles*. *Second stage*, *vesiculo-bronchial* breathing, associated with *sub-crepitant* and large and small moist or *bubbling râles*. *Third stage*, *bronchial*, *broncho-cavernous* and *cavernous respiration*, associated with large and small moist or *bubbling* and localized *gurgling râles*.

Bronchophony in its various degrees is associated with the second and third stages of tuberculosis.

Complications. Tubercular diseases of the brain, larynx, pleura, intestines and peritoneum; perineal abscess leading to fistula.

Prognosis. In the main unfavorable, although under proper treatment, change of climate and like favorable conditions, life may be prolonged for years. The question of perfect recovery is, to say the least, doubtful.

Diagnosis. The early diagnosis of tubercular phthisis rests mainly on the history, symptoms and physical signs. In the first stage it is often mistaken for dyspepsia, anæmia, malarial fever, or disease of the heart.

Treatment. *First stage*, life may be prolonged, and perhaps the further deposition of tubercle stayed, by a change of climate, nutritious food, warm clothing, out-door exercise and the internal administration of *ol. morrhue*, *ferrum iodidum*, *arsenicum*, *hypophosphites*, or the *elixir quiniæ, ferri et strychniæ*.

Special symptoms require treatment only when indicated, being careful to avoid everything which tends to impair the appetite, disorder digestion or lower the vital powers.

For *fever* the "Niemeyer pill" is usually recommended, to wit:—

R. Quinia sulph	gr.ij	
Pulv. digitalis.....	gr.ss-j	
Pulv. opii.....	gr. $\frac{1}{4}$ -ss	
Pulv. ipecac.....	gr. $\frac{1}{2}$	M.

For *night sweats*, *atropia sulph.*, gr. $\frac{1}{80}$, or *picrotoxin*, gr. $\frac{1}{60}$ at bedtime.

For *cough*, only when troublesome, preventing sleep, *codeia*, *acidum hydrocyanicum*, and finally *morphia sulph.*

The *dyspeptic symptoms*, which often cause great suffering, are benefited by—

R. Strychnia sulph.....	gr. $\frac{1}{35}$	
Acidi muriatic dil.....	gtt.x	
Aqua.....	ʒj.	

SIG.—Three times a day, before meals.

FIBROID PHTHISIS.

Synonyms. Chronic pneumonia; cirrhosis of the lungs; Corrigan's disease.

Definition. A hyperplasia (thickening) of the pulmonary connective tissue, resulting in atrophy and degeneration of the vesicular structure, associated with bronchial inflammation; characterized by cough, profuse expectoration, fever, emaciation, and ultimately death by asthenia.

Causes. Hereditary; inhalation of irritants; chronic bronchitis; alcoholism.

Pathological Anatomy. Thickening of the bronchial mucous membrane and dilatation of the air tubes; hyperplasia of the pulmonary connective tissue, resulting in the compression and consequent destruction of the vesicular structure, which is assisted by the contraction of the newly formed tissues. Sooner or later catarrhal pneumonia results, the product undergoing the cheesy degeneration, cavities being formed, and as a result of the long-continued suppuration, tubercular depositions occur, hastening the destruction of the lung tissue.

Symptoms. The course is most chronic, beginning as a *bronchial catarrh*, worse in winter, better in summer, when, after several years, the *cough* becomes more *continuous*, the *expectoration* freer, muco-purulent, often raised in paroxysms, in large amounts, *hectic fever* develops, *night*

sweats, dyspnœa and rapid *emaciation*, soon followed by *œdema* of the feet and ankles, the result of failing circulation, death occurring by *asthenia*.

Percussion. *Impaired resonance*, followed by *dullness*, with irregular spots of *amphoric* or *tympanitic* percussion note.

Auscultation. *First stage, vesiculo-bronchial*, or harsh respiration, associated with large and small moist or *bubbling râles*, followed by *bronchial, broncho-cavernous* and *cavernous* respiration, with circumscribed *gurgling râles*.

Prognosis. The duration of fibroid phthisis is most protracted, four or five years being the average duration; death, however, is the inevitable termination.

Diagnosis. Beginning as a bronchial catarrh, slowly progressing, with the remission of the symptoms during the summer months, finally becoming progressively worse, with the formation of cavities, and symptoms of *asthenia*, are the chief points in the diagnosis.

Treatment. To prevent the hyperplasia of the connective tissue, *hydrargyrum corrosivum chloridum, potassium iodidum, aurum et sodium chloridum* are recommended.

The *bronchial catarrh, hectic fever* and *night sweats* should be treated only when their severity becomes marked.

ACUTE PHTHISIS.

Synonyms. Acute miliary tuberculosis; galloping consumption.

Definition. An acute febrile affection, due to the rapid deposition throughout the body, but especially in the lungs, of the gray tubercle-granule; characterized by high fever, cough, profuse expectoration and rapid prostration.

Causes. Most common between puberty and middle life.

“That the gray granulation is deposited throughout the body under the influence of certain conditions of irritation, it is necessary that a peculiar vulnerability of the constitution exists, in other words, that it be of the scrofulous type.” The result of cascos or suppurative changes in the lungs.

Pathological Anatomy. “The gray granulation or miliary tubercle consists of a fine reticulation of fibres, with a mass of epithelioid cells and granules, and often having a giant-cell for its centre.”

The deposit is generally over both lungs and the bronchial tubes, the lower lobes most frequently, and is followed by hyperæmia, increase of the secretion, having a viscid and adhesive character, and the destruction of all the tissue with which it comes in contact.

Deposits also take place in the brain, pleura, intestines, peritoneum and kidneys.

Symptoms. The onset is usually sudden, with a *chill* or *chilliness*, followed by *fever*, 102° – 104° F., *rapid*, dicrotic *pulse*, 120 – 140 , *cough*, with scanty, glairy sputum, *increased respiration*, 30 – 50 per minute, *pain* in the chest, hot skin, dry tongue, deranged digestion and *great prostration*, the symptoms rapidly increasing, the sputum more abundant and often rusty in color, with more or less frequent attacks of *hæmoptysis*, soon followed by headache, vertigo, sleeplessness, often delirium, coma and death.

If deposits have occurred on the meninges and intestines, symptoms of these affections are superadded.

Percussion. The percussion resonance is normal until considerable deposits have occurred, when either slightly *impaired* or even slightly *tympanitic*. With the development of cavities the *amphoric* percussion note is present.

Auscultation *Vesiculo-bronchial* breathing, associated with large and small moist or *bubbling râles*, soon followed by *bronchial* and *broncho-cavernous* breathing, with large and small moist and circumscribed *gurgling râles*.

Duration. Acute phthisis terminates fatally in from four to twelve weeks.

Diagnosis. Commonly mistaken for typhoid fever with lung complications, an error that is readily made unless a close study of the history, symptoms and physical signs is made.

Treatment. We possess no means of retarding the progress of this malady. The various symptoms should be met as they occur, the patient at the same time being supplied with large quantities of spts. vini gallici.

DISEASES OF THE PLEURA.

PLEURISY.

Synonym. Pleuritis.

Definition. A fibrinous inflammation of the pleura, either acute or chronic in character; characterized by sharp pain, dry cough, dyspnœa and fever. It may be limited to a part or it may involve the whole of one or of both membranes.

Causes. *Idiopathic* pleuritis is said to be due to cold and exposure, to injuries of the chest walls, the result of muscular exertion.

Secondary pleuritis occurs during an attack of pneumonia, pericarditis, rheumatism smallpox, or puerperal fever.

Chronic pleurisy follows an acute attack, or is the result of tuberculosis, Bright's disease, or alcoholism.

Pathological Anatomy. The course pursued by inflammation of serous membranes is *hyperæmia* followed by *exudation of lymph*, the *effusion of fluid*, its *absorption* and the *adhesion* of the membranes.

The *first or dry stage* of pleurisy is a hyperæmia or diffused, irregular redness of the membrane, with little specks of exudation. The *second stage* is characterized by the copious exudation of lymph more or less completely covering the membrane, giving it a dull, cloudy or shaggy appearance. If the inflammation ceases at this point, it is termed *dry pleurisy*. The *third or stage of effusion*, is characterized by the pouring out of a sero-fibrinous fluid; more or less completely filling and distending the pleural cavity, and floating in the fluid are fibrinous flocculi, blood and epithelial cells.

Absorption of the fluid and of more or less of the exudative lymph soon occurs, the unabsorbed portion becoming organized, forming adhesions which obliterate the cavity.

The effusion, if on the right side, pushes the heart further to the left; if on the left side, the heart is displaced to the right, the impulse often being present to the right of the sternum. The lungs are also compressed and displaced upwards and against the spinal column, and on removal of the fluid, expand again, save in cases of chronic pleurisy, when the functional activity of the pulmonary structure is more or less permanently impaired.

Chronic pleurisy is the result when the fluid is not absorbed or is effused into the cavity in a slow and insidious manner. The membrane is irregularly thickened, with firm adhesions, fluid being found in the meshes, and depressions of the thoracic walls also occurring. The fluid may be serum, pus, or pus and blood (empyema). Openings may form, through which there is a permanent discharge, either externally (fistulous empyema) or into the bronchi, or rarely into the bowels.

Symptoms. Begins with a *chill*, followed by a *sharp*, lancinating *pain* (stitch) near the nipple or in the axilla, aggravated by coughing and breathing, associated with slight *tenderness on pressure*. The *respirations are rapid* and shallow, 30-35 per minute, a short, dry, hacking *cough*, moderate *fever*, compressible *pulse*, 90-120. With the effusion of liquid the *dyspnœa* becomes aggravated, the *cough* more distressing, the *cardiac action* embarrassed, the *countenance* wearing an anxious expression, the patient usually lying on the affected side. With the absorption of the fluid the symptoms gradually ameliorate, convalescence being more or less rapid.

Chronic variety, irregular chills, fever, night sweats, dyspnœa, palpitation, embarrassed circulation, with more or less prostration.

Inspection. *First stage*, deficient movement of the affected side, on account of the pain induced by full breathing. *Second stage*, bulging or fullness of the affected side, with obliteration of the intercostal spaces and displacement of the cardiac impulse.

Palpation. *Second stage*, vocal *frenitus* feeble or absent over the site of the effusion, exaggerated above the site of the fluid. Rarely, *fluctuation* may be obtained.

Percussion. *First stage*, may be slightly *impaired*. *Second stage*, *dullness* or even flatness over the site of the effusion; above the fluid *tympanitic* percussion note.

Auscultation. *First stage*, feeble vesicular murmur over the affected side, the patient breathing superficially, to prevent the pain; a *friction* sound, slight and grazing or creaking, becoming louder as the exudation of lymph progresses, limited usually to the angle of the scapula of the affected side, rarely heard over the entire side, accompanies the respiratory movements. *Second stage*, feeble or absent vesicular murmur on the affected side, depending upon partial or complete compression of the lungs by the fluid. Above the fluid puerile breathing, and just at the upper margin of the fluid a friction sound may be heard.

The *vocal resonance* is diminished or absent over the site of the fluid

and markedly increased above, *ægophony* being present at the upper margin of the liquid.

With the absorption of the fluid the vesicular murmur gradually returns, associated with a moist friction sound.

Prognosis. *Idiopathic* pleurisy usually terminates by recovery within three weeks. Pleurisy the result of constitutional causes has its prognosis modified by the condition with which it is associated. *Empyema*, unless the result of a diathesis, terminates favorably. *Double pleurisy is unfavorable.*

Diagnosis. *Acute pneumonia* is often mistaken for the effusion stage of pleurisy. The points of distinction are, in pneumonia there are high fever and a characteristic sputa, bronchial breathing, exaggerated vocal fremitus and resonance, and no displacement of the heart, the reverse occurring in pleurisy.

Enlargement of the liver may be mistaken for pleurisy with effusion, the chief point of distinction being, in enlargement of the liver the superior line of dullness is depressed upon full inspiration, while in pleurisy with effusion inspiration does not modify the location of the dullness.

Treatment. At the onset, in plethoric patients, *wet cups* over the affected side; if great dyspnœa, severe pain and high arterial tension, even *venesection*, and in anæmic or weak persons, *dry cups*, in all cases followed by *hot fomentations* or *poultices* to the chest. The severe pain is promptly relieved by the hypodermatic injection of *morphia* over its site.

Tinct. verat. virid., or *tinctura aconiti* in small doses, frequently repeated, in the plethoric, and *digitalis* in the weak, control circulation, lessening the amount of blood distributed to the affected membrane.

After effusion has begun *extractum pilocarpus fld.*, gtt. xx, every two or three hours, or—

R.	Potassii acetat.....	gr. xxx	
	Infus. digitalis.....	℥ ij.	M.
	Every three or four hours.		

If the effusion is uninfluenced by the above, use *potassium iodidi*, gr. xv, every four hours, with flying *blisters* over the affected side; or the fluid may be evacuated by *aspiration*, using at the same time full doses of "*Basham's mixture*."

If *double pleuritic effusion*, evacuate the fluid at once with the *aspirator*, and use the potassium and digitalis mixture mentioned above.

Chronic pleurisy, if the effusion is still serous, is often absorbed by the internal use of *potassium iodidum*, alternating with "*Basham's mixture*"

and *blisters*, the secretions being regularly attended to. If, however, the liquid is pus, the *aspirator* should be used at once, the patient placed upon "*Basham's mixture*," *stimulants* and *quinia*, and if the *empyema* shows a tendency to linger, the drainage tube may be indicated.

HYDROTHORAX.

Synonym. Dropsy of the pleura.

Definition. The effusion of serum into the pleural cavities (bilateral), the result of a general dropsy from renal or cardiac diseases.

Pathological Anatomy. More or less clear serous fluids in both pleural sacs, compressing the lungs. No signs of inflammation are present.

Symptoms. Following dropsy of the abdomen, occurs *dyspnœa*, with signs of deficient blood aeration, both lungs being compressed.

Palpation. Absent vocal *fremitus* over the site of the fluid.

Percussion. Dullness over the site of the fluid.

Auscultation. Absent *vesicular murmur* over the site of the fluid.

Prognosis. Controlled by the cause producing the general dropsy.

Diagnosis. Easily determined by association of the symptoms with a general dropsy.

Treatment. Depending upon the condition causing the dropsy. *Dry cups* over the chest afford relief. If the symptoms of non-aeration of the blood are severe, the fluid should be at once evacuated with the *aspirator*.

PNEUMOTHORAX.

Synonyms. Air in the pleural cavity; pneumo-hydrothorax.

Definition. The accumulation of air in the pleural cavities, with the consequent development of inflammation of the membranes; characterized by sharp pain, followed by rapidly developing dyspnœa and cough.

Causes. Generally the result of tubercular phthisis, causing perforation of the pleura. Perforation may take place from the pleura into the lung in connection with empyema or abscess of the chest walls. Direct perforation from without by laceration of a fractured rib or severe concussion.

Pathological Anatomy. The gas in the pleura consists of oxygen, carbon, anhydride and nitrogen, in variable proportions. It may fill the pleural sac completely, compressing the lung, or is sometimes limited by adhesions. The gas tends to excite inflammation, the resulting effusion being either serous or purulent.

Symptoms. Symptoms of pneumo-thorax, the result of perforation, are *sudden or sharp pain* in the side, *intense dyspnœa*, attended with symptoms of *collapse*, coldness of the surface and cold sweats.

The above symptoms, in many instances, follow a severe or violent paroxysm of *coughing*. In severe cases there is never a moment's cessation of the acute pain and distressing dyspnœa, causing orthopnœa, from the onset until death.

Inspection. Enlargement of the affected side, the intercostal spaces being widened and effaced, or even bulged out so that the surface of the chest is smooth. Respiratory movements of the affected side are diminished or absent.

Percussion. Immediately after the rupture the percussion note is hyper-resonant, or even tympanitic or amphoric in quality. If the amount of air in the pleural cavity becomes extreme there is dullness on percussion, associated with a feeling of great resistance or density. When effusion of fluid occurs dullness is observed over the lower part of the chest, hyper-resonant or tympanitic percussion note over the upper portions of the chest, these sounds changing as the patient changes his position.

Auscultation. The normal vesicular murmur may be diminished or absent. The typical amphoric respiratory sound is heard when the fistula is open, usually associated with a metallic echo.

Metallic tinkling, or the bell sound, is sometimes distinctly produced, by breathing, coughing or speaking, after the development of inflammation of the pleura.

The vocal resonance may be diminished or absent, or, rarely, it may be exaggerated with a distinct metallic echo.

After the development of inflammation in the pleura, suddenly shaking the patient gives rise to a *splashing sensation*, the succussion sound, if both air and fluid are present in the pleural cavity.

Prognosis. When occurring, the result of tuberculosis, the prognosis is extremely unfavorable; rarely, the fistulous opening being enclosed by inflammatory action, the case then becomes that of chronic pleurisy.

Treatment. At once a hypodermatic injection of *morphia*, which

relieves the severe pain and modifies somewhat the distressing dyspnœa, followed by the evacuation of the fluid and air with the *aspirator*.

If the fistulous opening is closed by inflammatory action, the case resolves itself into one of chronic pleurisy, the treatment indicated for that affection plus the treatment of tuberculosis, being the indication.

DISEASES OF THE CIRCULATORY SYSTEM.

The methods employed in making a physical examination of the heart are: I. *Inspection*. II. *Palpation*. III. *Percussion*. IV. *Auscultation*.

Inspection indicates the exact point of the *cardiac impulse*, whether there are any unusual *pulsations* or any *change* in the form of the *præcordia*.

Normally the *impulse* is visible only in the *fifth interspace*, midway between the left nipple and the sternum, its area covering about one square inch, most distinct in the thin, while often barely seen in the very fleshy; often displaced downwards by full inspiration and elevated by complete expiration.

Disease may alter the *position* and *area* of the impulse.

Position of the impulse is moved to the right by left pleuritic effusions or emphysema; downwards by hypertrophy; upwards by pericardial effusion.

Area of the impulse is changed and enlarged by pericardial adhesions or cardiac dilatation.

Palpation confirms the observations of inspection, as well as determines the *force*, *frequency* and *regularity* of the *cardiac impulse*.

Impulse diminished by cardiac dilatation, fatty degeneration of the heart, emphysema, pericardial effusion, and adynamic diseases.

Impulse increased by cardiac hypertrophy, during the first stage of endocarditis and pericarditis, functional cardiac disturbances and sthenic inflammations.

Percussion will indicate the boundaries of the *superficial* and *deep cardiac space*, the so-called *præcordia*. It is essential that the upper, lower and two lateral boundaries of the pericardial region be memorized, to wit: *superior boundary*, the upper edge of the third rib; *the lower boundary* is a horizontal line passing through the fifth intercostal space; *the left lateral boundary* is about or a little within a vertical line passing through the nipple, the *linea mammalis*; and the *right lateral boundary*

is an imaginary vertical line situated one-half an inch to the right of the sternum. These boundaries vary somewhat in health, but are sufficiently accurate for all practical purposes.

The superficial cardiac space represents that portion of the heart uncovered with lung; it is triangular in form, its apex being the junction of the lower border of the left third rib with the sternum, its area not exceeding two inches in any direction.

The superficial space is *increased* by cardiac hypertrophy or dilatation or pericardial effusion.

Diminished at the end of full inspiration or by emphysema.

The deep cardiac space represents that portion of the heart covered by lung, and extends from the upper border of the third rib to the lower edge of the fifth interspace, and from one-half an inch to the right of the sternum to near the left nipple.

It is *increased* by hypertrophy or dilatation of the heart, left pleuritic effusion, and apparently increased by consolidation of the anterior border of the investing lung.

Auscultation indicates the character of the normal cardiac sounds and the point of greatest intensity at which they are heard, and should be thoroughly familiar if abnormal sounds are to be fully appreciated.

The ear or stethoscope applied to the præcordia distinguishes *two sounds*, separated by a momentary silence, the short pause, and the second sound followed by an interval of silence, the long pause.

The first sound, corresponding to the contraction of the heart, viz.: *systole*, is louder, longer and of lower pitch and a more booming quality than the second sound, and has its point of greatest intensity at the cardiac apex or a little to its left. It corresponds closely to the pulsations as felt in the carotid or radial arteries.

The second sound is shorter, weaker, higher in pitch than the first sound, and of a clicking or valvular quality, having its point of greatest intensity at the second right costal cartilage and a little above, and corresponds to the closure of the aortic and pulmonary valves. The sound made by the closure of the tricuspid valves is best isolated at the ensiform cartilage. That made by the closure of the pulmonary valves at the third left costal cartilage. The extent of surface over which the cardiac sounds are heard varies, according to the size of the heart and the condition of the adjacent organs for transmitting sounds.

The cardiac sounds may be altered in *intensity, quality, pitch, seat*, and

rhythm, or they may be accompanied, preceded or followed by adventitious or new sounds, the so-called *endocardial murmurs*.

The intensity is increased by cardiac hypertrophy, irritability of the heart or consolidation of adjacent lung structure.

The intensity is diminished by cardiac dilatation or degeneration, during the course of adynamic fevers, emphysematous lung over-lapping the heart, or pericardial effusion.

The quality and pitch of the first sound may be sharp or short and of higher pitch when the ventricular walls are thin and the valves normal; its pitch and quality are also raised during the course of low fevers. The second sound becomes duller and lower in pitch when the elasticity of the aorta is diminished or the aortic valves thicken. Either or both sounds have a more or less metallic quality in irritable heart and during gaseous distention of the stomach.

The seat of greatest intensity of the cardiac sounds is changed by displacement of the heart in pleuritic effusions, pericardial effusions, abdominal tympany, etc.

The rhythm is often interrupted by sudden pause or silence, the heart missing a beat, or the sounds are irregular, confused and tumultuous, the result of organic changes in the cardiac muscles, valves, or orifices; or a reduplication of one or both sounds of the heart may occur.

The *adventitious cardiac sounds or murmurs* are of two kinds, those made external to the heart, viz.: *pericardial*, *exocardial*, or *frictional murmurs*; those made within the cardiac cavity, viz.: *endocardial murmurs*.

Pericardial murmurs, or friction sounds, are made by the rubbing upon one another of the roughened surfaces of the pericardial membrane during the early stage of inflammation. The sounds have a rubbing, creaking, or grazing character, and are differentiated from a pleural friction sound by their being limited to the *præcordia*, synchronous with every sound of the heart, and not influenced by respiration.

They are distinguished from an endocardial murmur by their superficial rubbing, creaking or grazing character, and by not being transmitted beyond the limits of the heart, either along the course of the vessels, or to the left axilla, or back.

Endocardial murmurs are of two kinds, viz.: *organic* and *functional*.

Functional endocardial or blood murmurs are the result of some change in the natural constituents of the blood.

Their character is soft, they are heard most distinct at the base during

systole, and are not transmitted beyond the limits of the heart, either to the left axilla or the back, and are associated with anæmia.

Organic endocardial murmurs are produced by blood currents pursuing either a *normal* or an *abnormal* direction.

In health there are *two direct blood currents* upon each side of the heart, viz.: the current from the left auricle to the left ventricle, the *mitral direct current*; the current from the left ventricle to the aorta, the *aortic direct current*; the current from the right auricle to the right ventricle, the *tricuspid direct current*, and the current from the right ventricle to the pulmonary artery, the *pulmonic direct current*.

When, from disease, the valves are not properly closed, the blood is allowed to flow back against the direct current, producing abnormal blood currents, viz.: when the mitral valve is incompetent, the blood flows from the left ventricle back to the left auricle during the cardiac systole, producing the *mitral regurgitant or indirect current*; when the aortic valves are incompetent, the blood is permitted to flow from the aorta into the left ventricle during the cardiac systole, producing the *aortic regurgitant or indirect current*; when the tricuspid valves are incompetent, the blood flows from the right ventricle back into the right auricle during the systole, producing the *tricuspid regurgitant or indirect current*; and when the pulmonary valves are incompetent, the blood flows from the pulmonary artery into the right ventricle, producing the *pulmonic regurgitant or indirect current*.

The *mitral direct current* occurs during the contraction of the auricle, or just *before* the first sound of the heart and immediately *after* its second sound. The *aortic direct current* is produced by the contraction of the ventricle and occurs with the first sound of the heart. The *tricuspid direct current* occurs during the contraction of the right auricle, or just before the first or immediately after the second sound. The *pulmonic direct current* is produced by the contraction of the heart, occurring during its first sound.

The *mitral direct, or presystolic murmur*, occurs before the first sound of the heart and immediately *after* the second sound. It is caused by a narrowing of the mitral orifice, has a blubbery quality, well imitated by throwing the lips into vibration by the breath, of a low pitch, and it has its seat of greatest intensity at the cardiac apex, and is not transmitted to the left axilla or to the base of the heart.

The *mitral regurgitant, or systolic murmur*, occurs with the first sound of the heart, resulting from the failure of the mitral valves to close the mitral orifice during the systole, in consequence of which the blood flows

back, or regurgitates into the left auricle. It is usually of a blowing or churning character, and has its seat of greatest intensity at the cardiac apex, being well transmitted to the left axilla and inferior angle of the left scapula.

The aortic direct murmur occurs with the first sound of the heart. It is caused by a narrowing of the aortic orifice, has a rough or creaking character, is of high pitch, having its seat of greatest intensity in the second intercostal space, to the right of the sternum, and is well transmitted over the carotid artery.

The aortic regurgitant murmur occurs with the second sound of the heart, and is caused by the failure of the aortic valves to close the aortic orifice during the diastole, whereby the blood flows back or regurgitates into the left ventricle. It is usually of a blowing or churning character and of low pitch, having its seat of greatest intensity over the base of the heart, and is well transmitted downward towards or below the cardiac apex. It is the only organic murmur produced in the left side of the heart which occurs with the second sound of the heart.

The tricuspid direct murmur occurs before the first sound of the heart and immediately after the second sound. It is caused by a narrowing of the tricuspid orifice, has a blubbery quality, and is low in pitch, having its seat of greatest intensity near the ensiform cartilage. This murmur is exceedingly rare.

The tricuspid regurgitant murmur occurs with the first sound of the heart, the result of the failure of the tricuspid valves to close the tricuspid orifice during the systole, thus allowing the blood to flow back or regurgitate into the right auricle. It is usually of a blowing or soft, churning character, having its seat of greatest intensity at the ensiform cartilage. This murmur is also very infrequent, and occurs mostly when the right ventricle is considerably dilated, without the existence of any valvular disease.

The pulmonic direct murmur occurs with the first sound of the heart. It is generally connected with congenital lesions. It occurs at the same instant that the aortic direct murmur occurs, and is distinguished from the latter by its not being transmitted into the carotid artery, whereas the aortic direct murmur is always thus transmitted.

The pulmonic regurgitant murmur occurs, like the aortic regurgitant murmur, with the second sound of the heart. This murmur is exceedingly rare, and its presence is only positively differentiated from aortic regurgitant by the absence of aortic lesions and symptoms.

ACUTE PERICARDITIS.

Definition. An acute fibrinous inflammation of the pericardium; characterized by slight fever, pain, præcordial distress and disturbed cardiac action and circulation.

Causes. May follow injuries of the chest walls, but generally secondary to either acute articular rheumatism, pneumonia, pleurisy, erysipelas, Bright's disease or pyæmia.

Pathological Anatomy. The same as serous membranes in other situations.

Hyperæmia of the membrane, most marked on the visceral layer, followed by the exudation of lymph scattered in irregular patches, giving it a rough and shaggy appearance (dry pericarditis), followed by the effusion of a sero-fibrinous fluid, with flocculi floating in it, and at times mixed with blood and pus. Rarely, the fluid is purulent.

The fluid and lymph undergo absorption with resulting adhesions identical with those described under pleurisy.

Symptoms. Begins with *rigors, fever, præcordial distress, acute shooting pains*, increased by breathing and coughing, *tenderness*, dry, suppressed *cough, increased cardiac action*, sometimes violent palpitation. Duration of this early stage from a few hours to a day.

Effusion stage: the symptoms of this stage depend upon the amount and rapidity of the effusion; *præcordial oppression*, tendency to *syncope, dyspnœa*, sometimes amounting to orthopnœa, *dysphagia, hiccough*, nausea, and *vomiting*, feeble, irregular *pulse*, sometimes either melancholia, delirium, or acute maniacal excitement.

Absorption is generally rapid, the heart remaining "irritable" for a long time. If instead of absorption, the fluid accumulates, and life is not destroyed, the pericardial sac becomes dilated, the affection becoming chronic.

Inspection. *Early stage*, excited cardiac action is evidenced by the impulse. *Effusion stage*, feeble undulatory or absent impulse, its position being displaced upward, or rarely downward; bulging of the præcordia and protruding abdomen.

Palpation. *Early stage*, excited or tumultuous impulse; pericardial *friction fremitus* rare. *Effusion stage*, feeble or absent impulse, and if present its position changed.

Percussion. *Early stage*, normal. *Effusion stage*, cardiac *dullness*

enlarged vertically and laterally, and if considerable fluid, of a *triangular shape*, with the base of the triangle on a line with the sixth rib, extending from the right of the sternum to the left of the left nipple, narrowing as proceeding upwards to the second rib, or above, which represents the apex of the triangle. The shape of the dullness is sometimes altered by changing the position of the patient.

Auscultation. *Early stage*, excited cardiac action, and usually a *friction sound* (exocardial murmur) synchronous with cardiac sounds and uninfluenced by respiration, but often increased by pressure with the stethoscope. *Effusion stage*, cardiac sounds feeble and deep-seated at the cardiac apex, becoming louder and distinct as pass towards the cardiac base. The friction sound sometimes heard at the cardiac base.

If *absorption* occur the above signs gradually give place to the normal, the friction sound returning, of a churning or clicking character, gradually disappearing.

Prognosis. Controlled by the severity of the inflammation and coexisting affections. If slight effusion, favorable. Death has rapidly occurred when a large quantity of fluid was rapidly effused, result of cardiac paralysis. *Adherent pericardium* is a frequent sequellæ.

Diagnosis. *Endocarditis* is often confounded with pericarditis, the points of distinction between which will be pointed out when discussing that affection.

Cardiac hypertrophy or *dilatation* is sometimes confounded with pericardial effusion, the difference between which will be pointed out when discussing those affections.

Hydropericardium may be mistaken for pericardial effusion, see that affection.

Treatment. *Perfect rest* in bed; for the vigorous, the application of *leeches* or *wet cups* to the præcordia, followed by the application of either *ice* or *poultices*; in the feeble *dry cups* to the præcordia, followed by poultices.

Early stages; in the strong, control the excited cardiac action by small doses of *aconitum* or *veratrum viride*, in the feeble using *digitalis*; in all cases *quinia* is indicated.

Effusion stage; as the effusion progresses the free administration of *alkalies*, viz.: *potassium acetat.* or *potassium carbon*, with *quinia*, nutritious liquid diet and *stimulants*, being cautious with the use of cardiac sedatives or tonics.

If the effusion has a tendency to linger, *blisters* to the præcordia, or *paracentesis*, is indicated.

CHRONIC PERICARDITIS.

Definition. A chronic inflammation of the pericardium, with either distention of the sac by fluid or adhesions of the pericardium; characterized by impaired cardiac action and disturbances of the circulation.

Causes. Almost always the result of an acute attack.

Pathological Anatomy. If the effusion is absorbed, the pericardial surfaces are *agglutinated* by several layers of lymph, which increase the thickness of the membranes half an inch or more, and the outer surface of the pericardium becomes adherent to the chest walls.

If the fluid is not absorbed it may progressively accumulate, distending the sac in all directions, displacing the diaphragm, interfering with the functions of the surrounding viscera, or a low grade of inflammation supervenes, the fluid becoming purulent, the disease terminating fatally after a variable period.

As much as eight to ten pints of fluid have accumulated in the sac.

Symptoms. *Præcordial pain* and *distress*, irregular, *feeble cardiac action*, *dyspnœa* aggravated by movement and *disturbed circulation*.

An agglutinated pericardium seriously increases the danger from an attack of any pulmonary inflammation.

Inspection. If the effusion be present, bulging of the præcordia and displacement of the impulse.

If adhesions are formed between the præcordial surfaces as well as with the chest walls, inspection reveals *depression of the præcordia*, narrowing of the spaces, increased extent but displaced impulse, uninfluenced by deep inspiration, and *recession* of the intercostal spaces and epigastrium with every systole of the heart.

Palpation. If effusion, displaced, feeble or absent impulse; if adhesion, displaced and tumultuous impulse; occasionally a pericardial fremitus is distinguished.

Percussion. If effusion, the dullness has more or less the character described for acute pericarditis.

If adhesions, the cardiac dullness is but slightly modified.

Auscultation. If effusion, cardiac sounds feeble and deep-seated at the apex, louder and more distinct at the cardiac base.

If adhesions, cardiac sounds are heard with equal distinctness in their several positions, associated with a rough friction sound (exocardial murmur).

Treatment. If effusion, *blisters* to the præcordia, with *potassium iodid.* to hasten absorption, the patient supported by nutritious diet, *quinia*, *ferrum* and *stimulants*, and kept perfectly quiet. If these means fail to remove the fluid, or if the fluid be purulent, *paracentesis* should be performed at once.

If adhesions of the pericardium have resulted the application of blisters to the præcordia, with the administration of potassium iodid., alternating with ferrum and quinia, are indicated, with nutritious diet, stimulants and perfect quiet.

HYDRO-PERICARDIUM.

Synonym. Pericardial dropsy.

Definition. The accumulation of water in the pericardial sac, *minus* inflammation; characterized by præcordial distress, disturbed cardiac action, dyspnœa and dysphagia.

Causes. Usually a part of a general dropsy; Bright's disease; sudden pneumothorax; pressure of an aneurism or other mediastinal tumor; disease or thrombosis of the cardiac veins.

Pathological Anatomy. The fluid may range in quantity from an ounce to one or two pints, and is of a clear, yellowish or straw-colored serum, at times turbid or bloody, and of an alkaline reaction.

If the amount of fluid is large the sac is dilated, its walls thinned by the pressure, and having a sodden appearance.

Symptoms. Dropsy of the pericardium is so generally associated with hydrothorax that the symptoms are but an aggravation of those attending that condition, viz.: *disturbed cardiac action, dyspnœa, dysphagia, dry cough and feeble circulation.*

The physical signs are exactly those of the stage of effusion of pericarditis, *minus* a friction sound.

Prognosis. Controlled entirely by the cause.

Diagnosis. *Pericarditis with effusion* and hydro-pericarditis present

nearly the same signs and symptoms, a differentiation between them being possible only by a history of the cause and the symptoms of the attack.

Treatment. Depends upon the cause of the attack. If the amount of fluid in the pericardial sac be great, *paracentesis* will give relief.

ACUTE ENDOCARDITIS.

Synonym. Valvulitis.

Definition. An acute fibrinous inflammation of the serous membrane lining the cavity of the heart and forming its valves; characterized by cough, dyspnœa, nausea and vomiting, disturbed cardiac action, resulting in changes in the valves or orifices of the heart.

Causes. Usually secondary to acute articular rheumatism, pleurisy, pneumonia, pericarditis or Bright's disease.

Pathological Anatomy. Inflammation of the endocardium is usually limited to the left side of the heart after birth, during foetal life the reverse being the case. The inflammation is limited or especially marked at the valvular portions of the endocardium, owing probably to the presence of fibrous tissue beneath the membrane in these situations, and to the strain which falls upon the valves during the performance of their functions.

Hyperæmia from congestion of the vessels beneath the membrane, with considerable swelling of the valves, the result of an *exudation of lymph and serum* beneath and on the free surface of the membrane covering the valves and *cordæ tendinæ*, resulting in the roughening of the surfaces and the agglutination of the mitral valves to each other, and of the aorta segments to the walls of the *āorta*, or the proliferation of the endocardial connective tissue, forming the nuclei of the so-called warty excrescences or vegetations, their size being increased by the deposit of fibrin from the blood within the cavities of the heart.

These vegetations may be detached by friction, giving rise to *emboli*, which may be washed by the blood current on the left side of the brain, into the kidneys, spleen, etc.

Rarely, ulceration of the endocardium follows the above phenomena.

Symptoms. This affection is usually masked by the course of another disease until disturbances of the circulation call attention to the heart.

The *onset* is often by *increase of temperature, præcordial distress, short*

cough, slight *dyspnœa*, more or less persistent *vomiting*, *increased cardiac action*, often rapid and tumultuous, with *throbbing carotids* and noises in the ear. As the inflammation progresses the cardiac action and pulse decline in rapidity, with more or less congestion of the lungs and venous stasis.

Auscultation. Develops a change in the character of the sounds or murmurs, the character and points of distinction between which will be pointed out when discussing valvular diseases of the heart.

Duration. Between one and three weeks.

Prognosis. Acute endocarditis is not very dangerous to life, hence a favorable prognosis may be given; regarding the ultimate results of valvular lesions, however, the prognosis is grave.

Diagnosis. *Pericarditis* is distinguished from endocarditis by the character of the physical signs. In *pericarditis* the murmur or friction sound is heard with either sound, is near to the ear and influenced by pressure of the stethoscope, besides being associated with more or less alteration in the size and shape of the cardiac dullness, and is not transmitted; while in *endocarditis* the murmur takes the place of, or is associated with, the cardiac sounds, and is transmitted, with the absence of change or increased dullness on percussion.

Treatment. *Perfect rest in bed.* At the onset leeches or *wet cups* to the præcordia, followed by ice, or, what is preferable, *poultices*.

The excited circulation should be controlled by *aconitum*, *veratrum viride*, or *digitalis*.

The free administration of *alkalies*, viz.: *potassium acetat*, or *carbonat*., until the urine is decidedly alkaline, may prevent permanent changes about the valves or orifices.

If alkalies fail and the inflammation shows a tendency to linger, good results are often obtained by a slight *hydrargyrum* impression.

If signs of oppressed circulation appear, the hands becoming blue, the face and extremities œdematous, with congestion of the lungs, the free use of *ammon. carbonat.*, *digitalis* and *stimulants* are all indicated. The free use of *ammon. carbonat.* will often prevent or break up heart clots. After the acute symptoms have subsided, more or less absorption of the exuded lymph has been promoted by the free use of *potassium iodidi*. During the entire course of the affection the diet should be of the most nutritious character.

ACUTE MYOCARDITIS.

Definition. An inflammation of the muscular tissue of the heart, by extension from an inflamed pericardium or endocardium, or secondary to pyæmia; characterized by pain, feeble circulation, symptoms of blood poisoning and collapse.

Causes. The result of endocarditis or pericarditis; pyæmia; typhoid fever; emboli of the coronary arteries.

Pathological Anatomy. Discoloration and softening of the cardiac substance and the infiltration of a sero-sanguinous fluid, fibrinous exudation and pus, leading to the formation of abscesses in the muscular structure of the heart.

The disease leads to the formation of either a cardiac aneurism or to rupture of the walls of the heart. If recovery occurs, cicatrices or depressed scars may mark the site of a former abscess.

Symptoms. The clinical evidences of inflammation of the cardiac muscle are very obscure. If, during the course of one of the maladies mentioned, there are developed *pain*, irregular and feeble *cardiac action*, *pyrexia* of a low type, with symptoms of *blood poisoning*, with a tendency to *collapse*, or the symptoms of the so-called *typhoid state*, myocarditis may be suspected.

Prognosis. The course of acute myocarditis is very rapid, death being the usual termination, in from three to five days. Chronic myocarditis pursues a very latent course.

Diagnosis. The existence of myocarditis can hardly ever be anything but a presumption, the signs being all negative rather than positive. If during the course of rheumatism, pyæmia, puerperal fever, typhoid fever, pericarditis or endocarditis, symptoms of cardiac failure appear suddenly, associated with signs of blood poisoning and collapse, inflammation of the cardiac muscle may be suspected.

Treatment. Largely symptomatic. Perfect quiet of mind, generous diet, free stimulation and the administration of quinia and ferrum.

CARDIAC HYPERTROPHY.

Definition. An overgrowth or increase in the muscular tissue which forms the walls of the heart; characterized by forcible impulse, over fullness of the arteries, diminished blood in the veins and accelerated circulation.

Causes. Obstruction to the outflow of blood, viz. : aortic stenosis, etc. ; emphysema ; Bright's disease ; functional over action ; excessive use of tobacco, tea, coffee, or excessive muscular action.

Varieties. I. *Simple hypertrophy*, or a simple increase in the thickness of the cardiac walls ; II. *Eccentric hypertrophy*, increase in the cardiac walls and dilatation of the cavities, viz. :—*Dilated hypertrophy* ; III. *Concentric hypertrophy*, increase in the cardiac walls and decrease of the cavities, very rare.

Pathological Anatomy. Hypertrophy of the heart is usually limited to the left side, the ventricles more commonly than the auricles, the latter dilating.

The shape of the heart is altered by hypertrophy ; if the right ventricle, the heart is widened transversely and the apex blunted ; left ventricle, heart elongated and, as a rule, the cavity dilated ; both ventricles hypertrophied, the heart has a globular shape. From increase in weight the heart may sink lower during the recumbent position, thereby lessening the area of cardiac dullness, but during the sitting or upright posture it sinks lower in the chest and to the left, causing more or less prominence of the abdomen.

The increase in the size of the organ is a true increase or hypertrophy of the muscular tissue, and not a hyperplasia. The tissue is firmer and the color brighter and fresher than when the heart is normal.

Symptoms. Depends upon the amount of hypertrophy. The most common are *increased and forcible cardiac action*, the arteries becoming fuller, the veins less full and the circulation accelerated, *pulsating carotids* and *aorta*, *headache*, often vertigo, frequent *epistaxis*, *congestion of the face and eyes*, *tinnitus aurium*, *dyspnœa* on exertion, *dry cough*, restless nights, with more or less jerking of the limbs, occasional præcordial pains shooting towards the left axilla, full, firm, *bounding pulse*, and beating in the superficial arteries.

A sphygmographic tracing shows the line of ascent vertical and abrupt, but the apex is rounded, and the line of descent is oblique, unless more or less regurgitation of the valves.

Inspection. Often fullness or prominence of the præcordia, with distinct impulse.

Palpation. The impulse is felt one or two intercostal spaces lower down and to the left, and is stronger and more or less diffused, termed the heaving impulse, and is very characteristic of extreme hypertrophy.

Percussion. The area of cardiac dullness is increased vertically and transversely upon the left side of the sternum, unless the right ventricle is also hypertrophied, when the cardiac dullness is increased to the right of the sternum.

Auscultation. If simple hypertrophy without any coexisting changes in the valves or their orifices, the first sound has a loud and somewhat metallic quality, the second sound being strongly accentuated.

Sequellæ. Cerebral hemorrhage; miliary cerebral aneurisms; dilation of the heart; fatty changes in the cardiac tissue.

Prognosis. When the result of valvular disease, the hypertrophy is said to be compensatory. If the result of Bright's disease, emphysema of the lung, or occurring late in life, or associated with atheromatous degeneration of the vessels, the prognosis is unfavorable; when the result of functional over action in the strong and robust, a further enlargement can often be prevented by active and persistent treatment.

Diagnosis. Hypertrophy of the heart can scarcely be mistaken for any other disease if a careful study of the physical signs is made.

Treatment. The indications are to lessen the force and number of the cardiac pulsations and to remove the cause whenever possible.

The former indications are best met by the persistent use of *aconitum* in small doses, viz. gtt. i-ij, three times a day, or *veratrum viride*, gtt. i-ij, three times a day at the same time keeping the bowels, kidneys and skin freely acting.

The habits of the patient are to be corrected, all laborious or active exercise to be restricted, the patient to be in the recumbent posture several hours during the day if possible, the diet being restricted, avoiding all forms of stimulants, viz. : liquors, tobacco, tea, coffee, etc.

Cases of cardiac hypertrophy associated with anæmia should, in addition to the above, be placed upon a course of ferrum.

DILATATION OF THE HEART.

Definition. An increase in the size of one or more of the cavities of the heart, without any increase or thickening of the cardiac walls; characterized by feebleness of the circulation, terminating in venous stasis, œdema and exhaustion.

Causes. Over-exertion in those of feeble resisting powers, as youths

or in armies, as first pointed out by Prof. DaCosta; insufficiency of the valves; emphysema; chronic bronchitis; gout, and Bright's disease.

Varieties. I. *Simple dilatation*, the cavities being enlarged, the walls normal. II. *Active dilatation*, corresponding to eccentric hypertrophy, the cavities being enlarged and the walls increased in thickness, the so-called "dilated hypertrophy." III. *Passive dilatation*, the cavities being enlarged and the walls thinned or stretched.

Pathological Anatomy. The right side of the heart is far more frequently involved than the left side. The shape of the organ is altered, according to the part affected. The weight of the organ is, as a rule, increased, as hypertrophy almost always accompanies or precedes dilatation.

The muscular tissue is generally pale, mottled and softened, and under the microscope presents evidences of degeneration. The orifices also participate, and especially the auriculo-ventricular, resulting in the valves becoming incompetent to close the orifices, and this latter effect is added to by the removal of the basis of the papillary muscles to a great distance from the orifice, in consequence of the extension of the wall.

When the auricles dilate, the large venous trunks opening into them unprotected by valves commonly participate in the dilatation, and may be greatly enlarged.

The passive congestion of the organs that follows the feeble circulation produces changes in their structure.

Symptoms. Those associated with enfeebled circulation, viz.: *feeble pulse*, veins distended, arteries emptied, *headache*, aggravated by the upright position, attacks of *syncope*, *cough*, with the phenomena of venous congestion, of the lungs, *dyspnœa*; liver, *jaundice*; stomach, *dyspepsia*; intestines, *constipation*; kidneys, *scanty*, often albuminous *urine*; brain, *dullness* of the mind and *vertigo*, often relieved by a copious epistaxis; and, finally, *dropsy*, beginning in the lower extremities, the patient dying worn out.

Great relief often temporarily follows any of the above symptoms under treatment; sooner or later, however, the venous stasis produces the final symptoms noted.

Inspection. Veins of the surface distended and enlarged; indistinct cardiac impulse, often diffused and wavy; if associated with tricuspid insufficiency, have pulsations of the jugular.

Palpation. Feeble and irregular, fluttering but distended impulse.

Percussion. Cardiac dullness extended transversely, and especially increased on the right side.

Auscultation. If no valvular lesions accompany the dilatation the cardiac sounds are weaker than normal, the first having a sharper quality than normal; if valvular lesions accompany, murmurs are present.

Prognosis. Unfavorable, death resulting from gradual exhaustion, or suddenly by cardiac paralysis if there is undue excitement.

Diagnosis. *Hypertrophy* of the heart shows increased cardiac dullness, but is a disease of powerful cardiac action, while dilatation is an affection of feeble action associated with dropsy.

Pericardial effusion has many points of resemblance to cardiac dilatation, but it begins suddenly, associated with some acute malady; and while the heart sounds are indistinct or feeble at the apex, they both become louder as they proceed towards the base, while dilatation of the heart has a chronic history, results in general venous stasis, and the cardiac sounds have the same intensity over the entire præcordia.

Treatment. The general nutrition of the patient must be promoted to the uttermost. Generous diet, moderate exercise, with *bitters* to increase the appetite and *ferrum* to improve the blood, and, in a majority of cases, more or less free use of a good *red wine*.

The heart tonics are *digitalis* in powder or infusion; *ext. convallaria fld.* gtt. v, t. d. *quinia*, *caffein* and *morphia sulph.* in small doses, the latter when the dropsy becomes great, associated with marked cyanosis, hypodermatically, as suggested by Prof. Bartholow, "often acts like magic in restoring the circulation."

The following pill is often of great advantage, viz. :—

R. Ferri redac.	gr. j-ij	
Quiniæ sulph.	gr. j-ij	
Pulv. digitalis.	gr. j	
Morphiæ sulph.	gr. $\frac{1}{4}$	M.

SIG.—Three times a day.

The secretions should be stimulated by *purgatives*, *diuretics* and *diaphoretics*.

If pulmonary congestion, *dry cups*, *digitalis* and *stimulants*.

Cardiac asthma, *dry cups*, *morphiæ sulph.*, hypodermatically, *spts. ætheris compositi* (Hoffman's Anodyne).

Hepatic congestion, *blue mass* and *podophyllin*.

Dropsy, *dry cups* over the kidneys, *digitalis* or *potassii acetat.* with *scoparius* and *juniperus* and *pulv. jalap comp.*, \mathfrak{z} j-ij, in water, before breakfast.

FATTY DEGENERATION OF THE HEART.

Definition. A change in the muscular fibres of the heart, in which the transverse striæ are replaced by granules and globules of fat; characterized by feeble cardiac action, venous stasis and dyspnœa.

Causes. Impaired nutrition in the elderly; prolonged anæmia; chronic gout; alcoholism; phosphorus poisoning; cancer, tuberculosis and scrofula; disease of the coronary arteries.

Pathological Anatomy. The distinction must be made between a deposit of fatty tissue upon or around the heart, and the degeneration of its muscular tissue.

The fatty metamorphosis may affect the whole organ, or be limited to the entire or portions of the ventricles. If the degeneration is marked the color is yellowish, the tissues soft and easily torn, and to the touch have a greasy feeling, oil being yielded on pressure.

The microscopic changes are characteristic. Early the striæ of the muscle are rendered indistinct by fat and oil globules, gradually becoming more and more obscured, until finally they disappear altogether, the fibres being replaced by fat granules.

Symptoms. Those of weak heart, anæmia of organs and venous stasis, viz.: *feeble, irregular but slow cardiac action, compressible pulse, præcordial distress*, often aggravated by attacks of angina pectoris; *dyspnœa*, aggravated on exertion, with anæmia of the various organs, from the feeble propulsive power; of brain, *vertigo*, swooning, or pseudo-epileptic attacks, especially marked on suddenly rising from a recumbent position; lungs, *dry, hacking cough*; gastro-intestinal tract, *dyspepsia* and *constipation*; kidneys, *scanty urine*, at times albuminous; and, finally, *dropsy*, beginning in the lower extremities.

A formidable symptom, causing much inconvenience as well as alarm to the patient, is what he will term his constant "sighing," the Cheyne-Stokes breathing, viz.: "A pause in the breathing, a complete suspension in the respiratory acts for a period of time (during which breathing might occur several times in the normal manner), then the resumption of respiration very feebly and slowly, and a gradual and progressive increase in the number and depth of respirations until the maximum is reached, and then again a gradual and progressive diminution, in the same order, in the number and depth of the respirations, until another pause occurs." The "oscillating respiration."

Concomitant symptoms are atheromatous change in the vessels and the *arcus senilis*.

Palpation. Weak apical impulse.

Percussion. Not markedly changed unless preceded by enlargement of the heart.

Auscultation. Feeble, toneless, almost inaudible first sound, the second sound being normal, unless changes in the valves occur.

Prognosis. Incurable, the affection pursuing a more or less chronic course, prolonged at times by treatment, death finally resulting from exhaustion or suddenly from cardiac paralysis or rupture of the heart.

Diagnosis. If in the aged, or those exposed to the causes have feeble heart, associated with atheroma of the vessels and *arcus senilis*, the diagnosis of fatty heart is almost positive. If dropsy occurs, however, it is difficult to distinguish from dilatation of the heart.

Treatment. Palliative. Generous diet, very moderate exercise, *stimulants*, *ol. morrhue* and the "triple elixirs," viz.: *elixir ferri, quiniæ et strychnia*.

To sustain the cardiac action, *caffein* or *morphia* in small doses, or hypodermatically, for the so-called cardiac asthma. *Digitalis* is contra-indicated.

VALVULAR DISEASES OF THE HEART.

Definition. Alterations in the cardiac valves or orifices, rendering the former incapable of properly closing the latter, or the latter impeding the blood current in its normal movement.

The lesions are of two kinds, viz.: *obstructive* and *regurgitant*.

Obstructive lesions, termed also stenosis, is a narrowing of the orifice, thereby obstructing the passage of the blood.

Regurgitant lesions, termed also insufficiency, is such change in the valves as to permit the blood to flow backward instead of onward, the true direction of the blood current.

Varieties. I. Mitral regurgitant. II. Aortic regurgitant. III. Tricuspid regurgitant. IV. Pulmonic regurgitant. V. Mitral obstructive. VI. Aortic obstructive. VII. Tricuspid obstructive. VIII. Pulmonic obstructive.

Causes. In the young, usually the result of endocarditis, and generally

affecting the mitral; in the elderly, chronic endoarteritis or atheromatous degeneration, most commonly affecting the aortic.

Prof. DaCosta has clearly established the production of aortic disease in early life by overwork and strain of the heart; syphilis; dilatation of the heart; atrophy or contraction of the valves, and congenital malformations.

MITRAL REGURGITATION.

Pathological Anatomy. The most common conditions observed are more or less contraction and narrowing of the tongues of the valve, with irregular thickening and rigidity; atheroma or calcification of the segments; laceration of one or more segments; adhesion of one or more segments to the inner surface of the ventricle; rupture of the *cordæ tendinæ*, and also contraction and hardening of the muscoli papillares.

As a result of the regurgitation of the blood into the left auricle, have dilated hypertrophy of its walls.

Symptoms. Insufficiency of the mitral valves soon leads to cardiac hypertrophy, to compensate for the diminished amount of blood sent onward by the ventricular systole. When the "compensation ruptures" occur, *præcordial distress, cough, dyspnœa, feeble, soft, rapid, irregular pulse*; finally pulmonary congestion, the legs œdematous, the abdominal cavity filled, the liver congested, the urine scanty and albuminous, the patient dying "drowned in his own fluid."

Inspection. Cardiac impulse lower than normal, the heart being enlarged.

Palpation. Early, forcible and diffused impulse; later, feeble diffused impulse.

Percussion. Transverse and vertical cardiac dullness increased.

Auscultation. Systolic blowing or churning murmur, audible in the mitral area, propagated to the apex, left axilla and under the angle of the scapula, either occurring with or taking the place of the *first sound* of the heart; the second sound markedly accentuated.

Prognosis. So long as the compensating hypertrophy can be maintained the prognosis is not bad; when dilatation supervenes, however, the patient soon perishes, from either congestion of the lungs or dropsy and exhaustion.

AORTIC REGURGITATION.

Pathological Anatomy. The valves or segments adhere to the walls of the aorta, or a segment is lacerated or may have a perforation in it, or, more commonly, the segments are shrunken, deformed and rigid, permit-

ting the regurgitation of the blood. These deficiencies in the valves are usually associated with more or less narrowing of the orifices.

The cardiac muscle rapidly hypertrophies, its cavity enlarging, "dilated hypertrophy."

Symptoms. Those of marked hypertrophy, viz.: forcible cardiac action, headache, tinnitus aurium, congestion of the face and eyes, with *pulsating vessels*, even small ones pulsating that were not before visible to the eye; pulsations of the retinal vessels can be recognized with the ophthalmoscope, and the *receding pulse*, which is particularly characteristic, viz.: forcible impulse but rapidly declining, called "water-hammer" pulse, also the "Corrigan pulse."

When "compensation ruptures," dyspnoea, cough, hepatic enlargement, congestion of the kidneys with scanty albuminous urine, ascites and dropsy. If mitral insufficiency is now superadded, rapidly occur general venous stasis and death.

Inspection. Forcible cardiac impulse.

Palpation. Strong, full cardiac impulse.

Percussion. Cardiac dullness increased transversely and vertically.

Auscultation. First sound, forcible: *Second sound*, replaced or associated with a *churning, rushing or blowing murmur* of low pitch, distinct at the second right costal cartilage, but most distinct at the junction of the sternum and the fourth left costal cartilage, transmitted downwards towards and below the apex.

Prognosis. The one valvular disease most apt to occasion sudden death; still, so long as the compensating hypertrophy remains intact, compatible with a quite active life.

TRICUSPID REGURGITATION.

Pathological Anatomy. This form of valvular insufficiency is either associated with right-sided cardiac dilatation from pulmonary obstruction, or is the result of mitral disease.

The tricuspid orifice is dilated in the majority of cases; occasionally the segments of the valves are contracted or adherent to the ventricle.

Symptoms. Venous stasis with its various consequences, and especially *pulsation of the jugular*, synchronous with the cardiac movement, and finally general venous pulsation, especially of the liver, pulmonary congestions, engorgement of the kidneys and dropsy. These symptoms are superadded to those of the affections with which tricuspid insufficiency is always associated.

Inspection. Diffused wavy cardiac impulse ; pulsating jugular synchronous with the cardiac movement, uninfluenced by respiration ; also more or less prominent hepatic pulsations.

Palpation. The cardiac impulse extended but feeble.

Percussion. Dullness on percussion, extending to the right and below the sternum.

Auscultation. The first sound is accompanied with a blowing murmur, most intense at the junction of the fourth and fifth ribs with the sternum, distinct over the xiphoid appendix, becoming feeble or lost in the left axillary region ; often associated, however, with a mitral systolic murmur.

PULMONIC REGURGITATION.

Pathological Anatomy. Insufficiency of the pulmonary valves is of rare occurrence, but when present the changes correspond more or less closely to those described for aortic regurgitation.

Symptoms. Those of dilatation of the right side of the heart and consequent pulmonary congestion, viz. : dyspnœa, deficient aeration of the blood, and cyanosis, distention of the superficial vessels, palpitation of the heart, præcordial distress, sudden suffocative attacks and dropsy.

Percussion. The cardiac dullness extended to the right of the sternum.

Auscultation. A loud blowing murmur associated with the second sound of the heart, most distinct at the junction of the third right costal cartilage and the sternum.

Prognosis. Death results sooner or later, from dropsy and exhaustion.

MITRAL OBSTRUCTION.

Pathological Anatomy. Mitral stenosis is caused by deposits around the orifice, the result of endocarditis, or else the segments of the valves are "glued together by their margins," leaving but a funnel-shaped opening, the so-called "buttonhole" mitral valve. Vegetations on the valves lead to more or less obstruction of the blood current.

Symptoms. Hypertrophy of the left auricle results from obstruction at the mitral orifice, the symptoms of stenosis being unobservable until the "compensation ruptures," when occur *irregular*, small and *feeble pulse*, *dyspnœa*, *cough*, bronchorrhœa, the result of bronchial congestion ; and dilatation of the right side of the heart, soon leading to general venous stasis, dropsy and death.

Inspection. Normal until hypertrophy, when an undulatory impulse is observed over the left auricle.

Palpation. When cardiac dilation occurs, a diffused, feeble and irregular cardiac impulse is felt near the xiphoid appendix.

Auscultation. First sound normal in character but often irregular in rhythm. The second sound normal. A blowing, sometimes rasping, sound is heard immediately *after the second sound* of the heart ceases, and immediately *before the first sound* begins, a *presystolic murmur*, heard most distinctly in the mitral area, lessened as it proceeds towards the cardiac base. The cardiac sounds are all more or less enfeebled when cardiac dilatation occurs.

Prognosis. The prognosis is controlled by the hypertrophy. Under favorable circumstances mitral stenosis is compatible with a long and rather active life.

AORTIC OBSTRUCTION.

Pathological Anatomy. Stenosis of the aortic orifice depends upon the projection of the valves inward, and their becoming rigid and thickened, or atheromatous or calcareous, so that they cannot be pressed back by the blood, but remain constantly in the current of the circulation. Occasionally the valves are covered with fibrinous masses, the opening into the artery being thus more or less completely closed, or the segments may be adherent by their lateral surfaces, leaving a central opening, which may be so contracted as to only permit the passage of the smallest article.

Symptoms. Hypertrophy of the left ventricle rapidly supervenes upon aortic stenosis. The *pulse small*, slow and hard. The supply of blood to the brain is insufficient, in many cases, and hence attacks of *vertigo*, *syncope* or slight epileptiform seizures occur; finally, dilatation of the left ventricle and incompetence of the mitral valve result, with subsequent pulmonary congestion, dyspnoea and general venous stasis, the pulse being soft and feeble.

Palpation. Lowered cardiac impulse, strong in the early stages, feeble when dilation occurs.

Percussion. The cardiac dullness is increased vertically, the transverse dullness being slightly affected.

Auscultation. The first sound replaced or associated with a *harsh, rasping sound*, whistling at times, having its greatest intensity at the junction of the second right costal cartilage with the sternum, transmitted along the vessels; the murmur may sometimes be heard a short distance from the patient.

Usually aortic stenosis is associated with more or less aortic regurgitation,

whence a *double murmur occurs*, having its greatest intensity at the base of the heart, the so-called "see-saw" murmur.

Prognosis. So long as compensation is maintained the symptoms of aortic stenosis are *nil*. When the compensation is ruptured, the usual symptoms of dilatation, venous stasis and dropsy soon follow.

TRICUSPID OBSTRUCTION.

This condition is one of the rarest affections of the heart, and if it ever does occur with or following an attack of endocarditis, the anatomical changes are similar to those of mitral obstruction. This condition soon leads to auricular dilatation; venous stasis rapidly supervenes, associated with venous pulsations similar to those described when speaking of tricuspid regurgitation.

PULMONIC OBSTRUCTION.

Pathological Anatomy. Always a congenital malady, the changes consisting in "constriction of the pulmonary artery, unclosed foramen ovale, unclosed ductus Botalli, stricture at the ductus Botalli, with hypertrophy of the right cavity and frequent association with tuberculosis of the lungs."

Hypertrophy of the right ventricle may ensue, the walls becoming as thick almost as those upon the left side.

Those in whom these congenital defects in the cardiac structure occur are otherwise weak, develop slowly, have flabby tissues, soft bones and poor nutrition.

Symptoms. The hypertrophy which often ensues may keep life apparently comfortable for some time, but sooner or later, "compensation ruptures," when occur cough, dyspnoea, cyanosis and death.

Prognosis. The duration of these congenital affections is short, usually from a few days to a few months; although several well authenticated cases are reported of a much longer duration.

DIAGNOSIS OF VALVULAR DISEASES.

In making a differential diagnosis between the various forms of valvular diseases of the heart, strict attention must be paid to the points of intensity at which the several murmurs are heard.

A *murmur* occurring with or taking the place of the *first sound* of the heart, the ventricular systole, heard most distinctly at the apex, transmitted to the left axilla, and at the inferior angle of the scapula, signifies mitral regurgitation—a *mitral systolic murmur*.

A *murmur* occurring with or taking the place of the *first sound* of the heart, with its point of greatest intensity at the xiphoid appendix, signifies regurgitation at the tricuspid orifice—a *tricuspid systolic murmur*.

A *murmur* heard with the *first sound* of the heart, high pitched, rasping or grating in character, with its point of intensity the greatest at the second right costal cartilage, signifies obstruction at the aortic orifice—an *aortic systolic murmur*.

A *murmur* heard with the *first sound* of the heart, soft in character, with its point of intensity most distinct at the junction of the third left costal cartilage with the sternum, signifies obstruction at the pulmonic orifice—a *pulmonic systolic murmur*.

A *murmur* occurring immediately after the *second sound* of the heart, and immediately before the beginning of the first sound of the heart, signifies obstruction at the mitral orifice—a *presystolic mitral murmur*.

A *murmur* heard with or taking the place of the *second sound* of the heart, most distinct at the second costal cartilage, to the right of the sternum, and well transmitted towards the apex or below, signifies insufficiency or regurgitation at the aortic orifice—an *aortic regurgitant or diasystolic murmur*.

Although eight distinct valvular murmurs have been described as occurring in the heart, those on the right side are of rarer occurrence, and are of little clinical importance.

If a *murmur* is heard with the *first sound* of the heart it is almost certainly *aortic obstructive or mitral regurgitant*; and if heard with the *second sound*, it is probably *aortic regurgitant*. A presystolic mitral murmur is also of comparatively rare occurrence, the force with which the blood passes from the left auricle into the left ventricle being, under ordinary circumstances, insufficient to excite sonorous vibrations.

Functional or anæmic murmurs may be confounded with the various forms of valvular disease of the heart. The chief points of distinction between them are, that an anæmic murmur, which is always heard at the base of the heart, is always systolic in time, not transmitted away from the heart, and is soft in character, low in pitch, and of variable intensity, now being heard, now entirely absent.

Treatment. There is no special plan of treatment for each form of valvular disease. The important point to bear in mind is that they are associated either with *cardiac hypertrophy or dilatation*, and the treatment, if any at all be required, is directed towards the secondary conditions. If compensation is complete, attention to the condition of the

bowels, kidneys and digestion, with some general directions as to exercise, is all that is required.

If the hypertrophy becomes marked and excessive, it is best controlled by either *aconitum* or *veratrum viride*.

If dilatation has occurred, the heart weak and feeble, the circulation impeded, and venous stasis has followed, digitalis, with more or less active purgation, are indicated.

PALPITATION OF THE HEART.

Synonym. Irritable heart.

Definition. A functional disturbance of the heart; characterized by increased frequency of its movements and more or less irregularity of the rhythm, having a strong tendency toward hypertrophy.

Causes. Over-exertion, "the heart strain" of DaCosta; dyspepsia; uterine diseases; excesses in tea, coffee, tobacco, alcohol or venery; moral and emotional causes, grief, anxiety and fear.

Symptoms. Usually palpitation of the heart has a sudden onset after some one of the causes mentioned, *præcordial oppression or pain, rapid, tumultuous beating*, the impulse being visible through the patient's clothing, *dyspnea, anxiety*, and a sense of *choking or fullness in the throat*, the recumbent position impossible, *vertigo*, faintness, flashes of light, the pulse full and strong or feeble, the face flushed or pale, the patient having a feeling of anxiety with a sense of some impending danger and a fear of sudden death. These attacks are paroxysmal, lasting from a few moments to several hours, or a day, the patient often voiding a large quantity of limpid urine after the paroxysm has subsided, when there is a strong tendency to sleep.

Diagnosis. Irritability of the heart is differentiated from the various forms of cardiac disease by the absence of all the physical signs mentioned as occurring in those conditions.

Prognosis. If early and properly treated, favorable.

Treatment. The first point in the treatment of irritability of the heart is to remove the cause, the next to prevent the recurrence of the attacks of palpitation.

The majority of cases do well by a combination of *digitalis* and *bella-donna*. Permanent relief is often afforded by a combination of *potassium bromidum* and *veratrum viride*. *Chloral* is also used. If the patient be anæmic, the author has had excellent results follow the prolonged use of the *elixir ferri, quiniæ et strychnia*. Locally *emplastrum belladonnæ* to the præcordia affords relief.

ANGINA PECTORIS.

Synonym. Neuralgia of the heart.

Definition. Paroxysms in which there occur sharp cardiac pains, extending usually into the left shoulder and down the left arm, accompanied by a feeling of constriction of the thorax and a strong sense of impending death.

Causes. Often hereditary; associated with chronic cardiac changes, as diseases of the coronary arteries or calcification of the valves; the excessive use of tobacco; according to Trousseau, it is a form of masked epilepsy, and may alternate with true epileptic attacks; often associated with hysteria.

Pathological Anatomy. "The pathological changes which stand in a causative relation to the attacks are those of the cardiac plexus of the phrenic and of the pneumogastric nerves. Pressure of enlarged lymphatics, inflammation of parts of the cardiac plexus, with changes in the coronary artery, seem to be most constant."

Symptoms. A paroxysmal affection, the attacks occurring irregularly; in the interval entire absence of symptoms.

"The patient suddenly sits up in his bed, with a cry of horror indicates the sense of pain at the præcordia. This pain is of great intensity, but is of a cold and sickening character; the chest is fixed, the breathing quickened, and the hand placed over the epigastrium finds that the heart's action is slight and enfeebled. The face wears a look of horror, pale and slightly leadened; a cold sweat breaks out upon the forehead; worse than the pain is the feeling of fearful sickening and depression. The poor patient gasps, 'I shall die! I shall die!' and, sometimes, his short but concentrated sufferings in a few moments end in death."

The unpleasant condition of these patients during an attack, and the

nervous disorder associated with it, slowly bring about a mental change. They are depressed and gloomy, sometimes suicidal, often developing epilepsy.

Diagnosis. The points to be remembered are that the attacks are always paroxysmal, the patient having a sense of coldness, and frequently a cold sweat, the heart's action not increased, the chest fixed and the breathing slow.

Prognosis. Unfavorable, the patient either succumbing during a paroxysm or by exhaustion, the result of the cardiac changes.

Treatment. As far as possible attempt to remove the cause.

Prompt relief follows the use of *amyl. nitrite*, $\text{m} \text{ iij}$, inhaled on the instant. To prevent the paroxysms, *arsenicum* $\text{m} \text{ x}$, three times a day, *ol. morrhua*, *hypophosphites*, and *elixir ferri, quiniæ et strychnia*.

DISEASES OF THE NERVOUS SYSTEM.

CONGESTION OF THE BRAIN.

Synonyms. Cerebral hyperæmia; cerebral congestion.

Definition. An abnormal fullness of the vessels of the brain; *active*, when arterial fullness; *passive*, when venous fullness; characterized by headache, vertigo, disorders of the special senses, and if hyperæmia severe, convulsions.

Causes. *Active.* Increased cardiac action, as from hypertrophy of the left ventricle, etc.; General plethora; excessive eating and drinking; alcohol; sunstroke; prolonged mental labor.

Passive. Dilatation of right heart; pressure upon veins returning cerebral blood.

Pathological Anatomy. The *post-mortem* appearances are, overloading of the venous sinuses and of the meningeal vessels, including the finer branches; the *pia mater* appears vascular and opaque; the *gray matter* of the convolutions unduly red; the *convolutions* may be compressed and the *ventricle* contracted.

Long continued or repeated congestion leads to enlargement and tortuosity of all the vessels, a moist and slimy condition (œdema) of the cerebral substance, and an increase in the sub-arachnoid fluid.

Symptoms. "Rush of blood to the head" may be gradual or sudden

in its onset, the symptoms aggravated by the recumbent position. *Headache* with paroxysmal neuralgic darts, *disorders of vision and hearing*, buzzing in ears and sparks before the eyes, *vertigo*, *blunted intellect*, inability to concentrate thought, *irritable temper* and curious *hallucinations*. The *face is red*, the *eye congested*, and the *carotids pulsating*. The *sleep is disturbed with dreams and jerkings of the limbs*. In children *convulsions*. If the attack is sudden (apoplectiform), *sudden unconsciousness* with *muscular relaxation* occur.

Prognosis. *Mild cases* terminate favorably in a few hours to a day or two, with strong tendency to recur. *Severe cases* (apoplectiform) may terminate in health, but usually foretell cerebral hemorrhage.

The *passive* form is controlled by the lesions causing it.

Treatment. *Active.* Remove cause if possible. *Elevate head* and apply *cold*, either as cold cloths or the ice cap. *Leeches* to the mastoid, or *cups* to the neck, or in the *apoplectiform* variety *venesection*, to diminish the intra-cranial blood pressure; compression of the carotids, or ligatures about the thighs, have been recommended.

An active purgative is also indicated, by lessening the vascular tension.

In mild cases the application of *cold* and *potassii bromidi*, gr. xxx–xl, repeated, controls the congestion; in more severe cases any or all of the above mentioned means, together with full doses of *tinct. veratrum viridi* or *aconitum* may be needed.

Passive. Becomes a part of the treatment causing the hyperæmia.

CEREBRAL ANÆMIA.

Definition. An abnormal decrease in the quantity of blood in the cerebral vessels; *general*, when the diminished supply includes all the vessels; *partial*, when the diminished supply is limited in area; characterized by pallor, headache, vertigo, and, rarely, convulsions.

Causes. *Partial* cerebral anæmia results from obstruction of a vessel, from embolism or thrombosis. *General* cerebral anæmia results from hemorrhages, wasting diseases, sudden shock, feeble cardiac action and general anæmia.

Pathological Anatomy. The cerebral vessels are less full than normal; the brain is pale and milky in color, and on transverse section there are no bloody points; the ventricles and perivascular lymph spaces are well filled with fluid.

In *partial* anæmia the local conditions differ somewhat from the above.

Symptoms. *General*.:—*Headache*, relieved by the recumbent position; *vertigo*, aggravated by exertion; general *pallor* and anæmia, with attacks of *fainting*.

Prognosis. *General*.:—Favorable in all cases save those of prolonged hemorrhage.

Treatment. Regulated *nourishment*, with *stimulants*, and certain number of hours daily in recumbent position. When tendency to attacks of *swooning*, stimulants or even cautious inhalation *amyl nitrat*. For the quantity or quality of blood,—

R.	Tinct. ferri chlor.....	m _{xv}	
	Acid. phosph. dil.....	m _v	
	Liq. arsenici chloridi.....	m _{ijj}	
	Syr. limonis.....	m _{xxx}	
	Syr. zingiberis, q. s. ad.....	ʒ ij.	M.

Every six hours, well diluted.

CEREBRAL HEMORRHAGE.

Synonym. Apoplexy.

Definition. The sudden rupture of a vessel and the escape of blood into the cerebral tissues; characterized by sudden unconsciousness, irregular, noisy respiration and complete muscular relaxation.

Causes. Rare under forty years. The principal cause is disease of the vessels, and especially if associated with cardiac hypertrophy; also hereditary tendency, and associated with Bright's disease. More frequent in the spring and autumn.

Pathological Anatomy. Most common locations of cerebral hemorrhage are the *corpus striatum* and *thalamus opticus*; less commonly the *anterior* and *middle lobes* and the *cerebellum*; next in frequency the *pons* and *medulla oblongata*; and rarely on the *convexity* of the brain, termed *meningeal* hemorrhage.

When the hemorrhage is large, the blood may break into the ventricles and pass by the *iter* from the third to the fourth ventricle.

The *clot* is dark in color, excites inflammation around it, resulting in its being encysted and then gradually absorbed, leaving a *cicatrix*, or the brain tissue around the clot softening and degenerating.

Symptoms. Two modes of onset, to wit : with and without *prodromes* or "warnings."

Prodromes. Headache, vertigo, transient deafness or blindness, sensations of numbness of extremities, with local palsies and a constant *dread of an attack*.

The *attack* begins with *vomiting*, followed by either partial or complete *insensibility* ; *respiration slow, irregular and noisy* ; during inspiration the paralyzed cheek is drawn in and puffed out in expiration ; *pulse* slow and full ; *pupils* uninfluenced by light, the *face* flushed, the *eyes* congested and the *carotids* throbbing ; the *temperature* declines below the norm, a degree or two.

The *muscular system* is profoundly relaxed, and the *reflex movements* are abolished. The head and eyes *deviate*, in many cases, *towards* the affected side in the brain *or from* the paralyzed side.

If the unconsciousness continue longer than twenty-four hours, death is the usual termination, preceded by pale face, irregular and rapid pulse and respiration, and rise of temperature.

Reaction obtains in from a half to three hours, consciousness returning, reflex excitability reviving, associated with headache, confusion of mind, and more or less *paralysis* of motion and sensibility of one side of the body, termed—*hemiplegia*.

The *electric excitability* of the paralyzed parts is preserved.

Restoration may be delayed by inflammatory symptoms, the temperature rising to 101°–104° F., and tonic contractions (*early rigidity*) of the paralyzed muscles and severe neuralgic pains.

Sequellæ. *Paralysis* of the muscles of the face, tongue, body and extremities of one side, *opposite* to the location of the hemorrhage, termed *unilateral paralysis* or *right or left hemiplegia*.

Paralysis of both sides of the body, due to simultaneous hemorrhage on *both* sides, termed *bilateral hemiplegia*.

Paralysis of one side of the face and the extremities of the opposite side, due to hemorrhage into the *pons varolii*, termed, *alternating* or *crossed paralysis*.

Occasionally *tonic contractions* occur in muscles long paralyzed, termed *late rigidity*, and is evidence of a *secondary degeneration* of the nerve fibres.

Choreic movements in paralyzed muscles is termed *post-hemiplegic chorea*, due, according to Charcot, to changes in the motor centres.

The *Mental powers* are always more or less permanently impaired, the

patient irritable and emotional, and the same holds good concerning *memory*.

Prognosis. If the patient survive the immediate effects of a cerebral hemorrhage, he is always in danger of a new attack, since the causes of the original attack still remain. Another attack or two is the usual course, a fatal termination ultimately occurring.

The *hemiplegia* is uncertain, a partial recovery may occur within a few months, or it may continue for years.

Diagnosis. *Insensibility from Drink* differs from apoplexy in the following points, to wit: insensibility not so complete, no drawing-in and puffing-out of one cheek with respiration, the pulse frequent instead of slow, the pupils influenced by light; upon raising both legs no difference is apparent on allowing them to fall; the eyes and head are not turned to one side, and lastly, the condition is ameliorated on the inhalation of ammonia.

Opium poisoning differs from apoplexy by the gradual approach of the coma, and that the patient can be momentarily aroused, and also by the absence of the heavy stertor of apoplexy.

Uræmia causes a coma that greatly resembles apoplexy. A history of Bright's disease at once clears up the case; also uræmic coma is always preceded by convulsions, and has a continued depressed temperature.

Syncope or a fainting-fit is of sudden onset, but being due to a failure of the circulation, the pulse is feeble, the face pale, the respiration quiet, and the duration of unconsciousness short, all the very opposite of an apoplectic fit.

The differential diagnosis from cases of *embolism* or *thrombosis* will be pointed out when treating of those conditions.

Treatment. If the *prodromes* threaten an attack, the most prompt means of reducing the intra-cranial blood pressure is by *venesection*, followed by a brisk purgative; if the patient is weak, *leeches* to the mastoid, or *potass. bromid.*, gr. xl-lx, may be substituted.

For the *attack*, loosen clothing, remove all constrictions, cool room, perfect quiet, and at once *venesection*, *cold to head*, *mustard foot-bath* and *oleum tiglii*, gtt. j-ijj, *glycerinæ*, gtt. xv, placed on back of tongue; if pulse full and strong, when consciousness is regained, either *tinct. verat. virid.* or *tinct. aconit. rad.* are indicated.

If during the attack the *face* is *pallid* and the *pulse irregular*, the patient is prostrated by the *shock* and *stimulants* and *digitalis* are indicated, with, perhaps, *leeches* to the mastoid and an *enema* of *terebinthina*.

For secondary fever, either *tinct. aconit.* or *tinct. verat. virid.*; for the headache and delirium, *camphor bromid.*

For aiding *absorption* of the clot, keep secretions acting, good diet and a course of *potass. iodid.* or *hydrarg. chlor. corro.* alternated with—

R. Liq. potassii arsenit..... gtt. v
Syr. calcii lacto-phosph..... f ʒ ij.

Three times a day.

After two or three months a weak *galvanic current* applied directly to the brain, by placing an electrode on each mastoid process, promote absorption.

For the *paralyzed muscles*, the *faradic current* applied by placing one electrode over or near the nerve innervating the muscle and the other over its belly, acts as a tonic, preventing wasting; it is assisted by hypodermatic injections of *strychniæ sulph.* gr. $\frac{1}{30}$ three times a week.

ACUTE MENINGITIS.

Synonym. Cerebral fever.

Definition. An acute inflammation of the cerebral pia mater and arachnoid membranes; characterized by headache, chill, fever, delirium, and followed by symptoms of general collapse.

Causes. Cerebral overwork; prolonged wakefulness; exposure to the sun; disease of the internal ear; erysipelas; secondary to diseases of serous membranes most frequent between the ages of 16 and 45 years.

Pathological Anatomy. The inflammatory changes may be limited to either the *convexity* or *base* of the *brain*.

Intense *hyperæmia* of both membranes, followed by a purulent and fibrinous *exudation*. The ventricles may be filled with fluid, compressing and flattening the convolutions.

Symptoms. Vary according to the stages:

Prodromes, headache, vertigo, cerebral vomiting, more or less feverishness, continuing from a few hours to one or two days, when

Stage of Invasion; onset sudden, with chill, high fever, 103–104°, pulse 100–120, face flushed, with congested eyes, headache, vertigo, nausea and vomiting greatly aggravated.

Stage of Excitation; General sensibility of the body, increased sensitiveness to light, and acuteness of hearing, delirium furious, often resembling insanity, continual jerking of the limbs, oscillations of the

eyeballs, twitching of the muscles of the face, and in children convulsions. Duration, from a day to a week or two.

Stage of Debression or Collapse ; The patient gradually becomes more quiet ; the delirium subsides, as well as the muscular agitation ; *somnolence* occurs, passing into *coma*, at times temporary consciousness, *coma* soon following again ; *pulse* irregular and slow, *fever* less, *various palsies*, viz. : strabismus, ptosis ; pupils uninfluenced by light, mouth drawn to one side, urine and fæces involuntarily discharged. Death following, either by convulsions or by deepening *coma*.

Prognosis. Not very favorable. If early recognized and treated a fair number of recoveries occur, but it usually leaves the patient subject to attacks of epilepsy or with a persistent headache.

Diagnosis. *Cerebro-spinal fever* closely resembles acute meningitis, the points of distinction between which are the first named, occurring epidemically, associated with marked spinal symptoms and an eruption.

The *cerebral symptoms* of rheumatism are differentiated from idiopathic meningitis by the association of the joint trouble.

Cerebral symptoms of typhoid and typhus fever have a close resemblance to idiopathic meningitis, and are only determined by a study of the clinical history.

Treatment. Must be energetic from the onset.

In vigorous subjects, *venesection* or *leeches* behind the ear or to the inside of the nostrils ; in weakly subjects, *cups* to the nucha, more or less persistent application of *cold* to the head, viz. : *ice* or *cold compresses*.

Active purgation, *calomel*, gr. x, followed by *ol. tigllii*, gtt. j—ij or *magnesii sulph.*, ℥ j, well diluted, frequently repeated.

Control the active circulation with *aconitum* in small doses, frequently repeated, combined with *potassii bromidum*, gr. xx—xl. The cerebral circulation may be markedly influenced by compression of the carotids.

The apartment should be cool, the air pure, the patient's head elevated, the diet easily digested, nutritious food.

If the case show a disposition to linger, small doses of *calomel* or *potassii iodidi* are of benefit.

Third stage : Free *stimulation*, nutritious food, *ferrum iodidum* and flying *blisters*. -

TUBERCULAR MENINGITIS.

Definition. An inflammation of the membranes of the brain attended

with or due to the deposit of miliary tubercle; characterized by gradual decline of the bodily and mental powers.

Causes. Most frequently occurs in children between two and six years of age, although numerous cases are reported occurring between the ages of twenty and thirty years; inherited diathesis. The "gelatinous children of albuminous parents," as the phrase goes, possess a special susceptibility to tubercular meningitis."

Pathological Anatomy. The deposition of tubercle usually occurs at the base of the brain.

Depositions of grayish-white granules of a translucent, somewhat gelatinous appearance, miliary tubercle, are distributed along the vessels of the pia mater, resulting in inflammation and the exudation of lymph, with the consequent thickening and opacity of the membranes.

The cerebral tissue is not usually involved, although on section the lines indicative of blood vessels are very much increased in number. The ventricles are distended by a clear, or milky, or even bloody serum.

Tubercular deposits occur in the lungs, intestines, and, at times, in other organs.

Symptoms. *Prodromes*; child becomes irritable, has loss of appetite, loss of flesh, abdomen swollen, constipation, alternating with diarrhoea, irregular attacks of feverishness, the child grinding its teeth during sleep. Duration of this stage is from a week to a month or two.

Stage of excitation; onset rather sudden, with obstinate vomiting, severe headache, convulsions, fever, $102-103^{\circ}$ in the evening, falling to 99 in the morning, pulse soft and compressible, with irregular rhythm, and on drawing the finger nail lightly over the surface a red line results, "the cerebral stain" of Trousseau. The symptoms grow progressively worse with exaltation of the special and general senses; the least pinch, or even touch causing exquisite pain: spasmodic movements of the muscles, with contraction and rigidity, at times opisthotonos. Duration of this stage is about two weeks.

Stage of depression; the result of the pressure of fluid; the pulse slow and compressible, with irregular rhythm; temperature depressed; tendency to somnolence, alternating with quiet delirium, mental sopor, continual movement of the fingers, as in picking up objects; convulsions from time to time, strabismus, oscillation of the eyeballs, followed by intervals of wakefulness, when the headache is excruciating, causing the peculiar unearthly, shrill, cry or shriek, "the hydrocephalic cry," associated with

contraction of the muscles of the face, as if suffering were experienced; finally, *collapse*, occurring with the "Cheyne-Stokes" respiration, the *coma* deepening, followed by death, *convulsions* often ending the scene. Duration, from a day or two to two weeks.

Prognosis. Unfavorable. Usual duration, three or four weeks after fully developed prodromes.

Diagnosis. *Acute meningitis* and tubercular meningitis have closely analogous symptoms during the stage of excitation, but the history and clinical course of the two maladies determine the diagnosis.

Treatment. Most unsatisfactory. No means of staying the disease. Treat symptoms as they develop. Blisters, leeches, active purgation, pustulating ointments, potass. iodid. etc., are all useless.

If the hereditary tendency is marked, nutritious food, ol. morrhuæ, iodium and quinia may somewhat delay the development of the affection.

. CEREBRAL TUMORS.

Synonym. Intra-cranial tumors.

Definition. Tumor of the brain is either a growth in the cerebral tissue, the meninges or vessels; characterized by symptoms of pressure.

Causes. Injuries to the head; syphilis; changes in the vessels; tubercle and cancer; hereditary.

Pathological Anatomy. The size varies, and may be as large as an orange before it will excite symptoms.

Tumors of the brain are of various kinds, viz: *vascular tumors*, aneurisms; *parasitic tumors*, cysticercus; *diathetic tumors*, tubercle or syphilis; *accidental tumors*, fibroplastic.

Whatever the character of growth, it produces irritation of the surrounding parts, and by pressure, destruction of the tissues, or interferes with the arterial or venous flow.

Symptoms. Those common to tumors in general are *headache*, persistent and increasing in intensity, *defects of vision*, even blindness, *defects of hearing*, *taste* and of *speech*, the result of paresis of the vocal chords, *vertigo* associated with nausea and *vomiting*; *convulsions*, epileptiform in character, usually limited to one side of the body, occurring at regular intervals, or confined to the eyeballs or one limb, with *no loss of consciousness*; *palsies*, beginning first as strabismus, ptosis and dilatation of the

pupil, of the facial muscles, paraplegia and general hemiplegia; defects of sensibility, viz.: sensations of numbness, coldness in the limbs and body. Occasionally disturbances of equilibrium manifested by a tendency to go backwards or turn to the right or left; intellectual faculties well preserved until late in the affection, when the memory becomes impaired or lost for certain articles, and finally a gradually advancing imbecility.

Prognosis. Unless of syphilitic origin, unfavorable.

Diagnosis. Rarely can a positive diagnosis be made. The following points will aid, viz.: long-continued, persistent headache without appreciable cause, epileptiform convulsions, unilateral, without loss of consciousness; difficulty of vision, hearing and speech, associated with nausea and vomiting, and local and general palsies.

The location of the tumor must be determined by the more or less pronounced character of certain symptoms.

The diagnosis of the character of the growth can only be determined by a close study of the history.

Treatment. Unsatisfactory. Mostly symptomatic. As benefit occasionally follows the use of *potassium iodidum*, gr. xx three times a day, or *ext. ergotæ fld.*, ʒ ss-j three times a day, continued until their physiological effects are produced, these remedies should be used in all cases, discontinuing them if no benefit follows their physiological effects.

APHASIA.

Definition. The inability to use spoken language or give utterance to ideas.

Amnesic aphasia, or loss of memory of words.

Ataxic aphasia, the inability to combine the different parts of the vocal apparatus for vocal expression.

Agraphia, the inability to recognize and make the signs by which ideas are communicated in written language.

Amnesic agraphia, the loss of memory of written signs.

Ataxic agraphia, the inability to combine the muscular apparatus, "writers' cramp."

Pathogeny. The distinction between aphasia and aphonia must be clearly determined. Aphasia is not the result of any one specific lesion, but occurs during the course of several, viz.: occlusion of certain cerebral vessels; cerebral hemorrhage; cerebral abscess or softening, meningitis, tumors, mental or moral causes, or hysteria.

It is now almost definitely determined that lesions of the left middle cerebral artery, island of Reil, third frontal convolution, and parts of the corpus striatum, are associated in the production of aphasia. The lesions are usually upon the left side of the brain, the aphasia being associated with right hemiplegia.

Symptoms. The degree to which articulate language is impaired varies from the loss of a few words to complete inability to communicate ideas. The intellect does not suffer in proportion to the loss of words; for, showing the subject an article, while he may miscall it, if you call it by name he will recognize it. This inability to convey thoughts is a source of great mental suffering, in some leading to a suicidal tendency.

A strange clinical fact is the strong tendency to profanity shown by aphasic patients.

Prognosis. Controlled entirely by the cause. If the result of congestion of the brain or a syphilitic tumor, the prognosis is favorable. If associated with hemiplegia the clot may undergo absorption, the prognosis being favorable. If associated with softening of the brain, however, the disease grows progressively worse.

Diagnosis. *Aphonia*, or loss of voice, should not be confounded with aphasia, or the inability to remember words.

Paralysis of the tongue, or inability to move this organ, thereby interfering with articulate language, should not be confounded with aphasia, which, as a rule, is not associated with paralysis of the tongue.

Treatment. Depends upon the cause, which must be energetically treated, as the aphasia pursues a course parallel to the associated malady. Cases not associated with cerebral softening have regained the memory of words by a course of carefully conducted speech lessons.

SPINAL HYPERÆMIA.

Definition. An abnormal fullness of the cerebral vessels; active when arterial hypercæmia; passive when venous hyperæmia; characterized by pain in the back, with more or less pronounced temporary disorders in locomotion.

Causes. Cold and exposure; arrested menses; arrest of habitual hemorrhoidal discharge; malaria; protracted erect posture; injuries to the back; certain spinal poisons, viz., strychnia, picrotoxine, alcoholic excesses.

Pathological Anatomy. *Active.* The post-mortem appearances are congestion of the meninges and cord, the same vessels supplying both, with numerous points of extravasation, due to the rupture of capillary vessels. The spinal fluid is increased in amount.

Passive. A general bluish discoloration, owing to the abnormal fullness of the large anastomosing vessels; spinal fluid somewhat increased.

Symptoms. *Active.* Dull *pain* in the back; persistent and increased by touch, pressure or motion; *tingling sensations* in the limbs and feet, and sometimes the hands and arms. *Increased reflex*, with *disorders of motility*, and when the patient is in the recumbent position, *jerking of the limbs*. On attempting to walk it is done with difficulty, from an *incomplete loss of power*.

If the upper part of the cord is affected, have *dyspnoea* and *palpitation*.

There often occur painful priapism and frequent nocturnal emissions.

The above symptoms may be followed by a more or less pronounced temporary depression.

The *electro-contractility* is preserved, and in many cases even increased or exalted.

Duration. Two or three days; if longer, myelitis may result.

Prognosis. Favorable, recovery occurring in three or four days.

If the symptoms show a tendency to linger, myelitis more or less pronounced will ensue.

Diagnosis. *Anæmia* causes more or less spinal irritability and tenderness; but the history, pallor and general weakness, unassociated with defects of motility or sensibility will prevent error.

Myelitis and spinal meningitis have symptoms in common with spinal congestion, which will be pointed out when discussing those affections.

Treatment. Rest, cups or leeches along the spine, followed either by ice or hot douche, or hot sponges, and active purgation, to diminish the blood pressure.

If the result of suddenly arrested perspiration, *pilocarpus*. If following suddenly arrested menses, *aconitum*. If associated with active circulation, *potassium bromidum*, *ergota* or *digitalis*.

For the passive form, treating the cause, digitalis, tonics, and purgatives.

SPINAL MENINGITIS.

Definition. Inflammation of the membranes of the spinal cord, either

acute, sub-acute or chronic; characterized by pain in the back, rigidity of the muscles, disorders of motility and sensibility.

Causes. Exposure to cold and dampness; injuries to the vertebra or membranes; rheumatism or puerperal fever; syphilis.

Pathological Anatomy. *Acute.* Hyperæmia of the membranes, with swelling of the tissues, the result of serous infiltration followed by purulent and fibrinous exudation. The roots of the spinal nerves are covered with exudation, and are swollen and soft. The cord proper is more or less congested and œdematous.

Chronic. Adhesions of the membranes, with more or less accumulation of fluid, resulting in atrophic degeneration of the cord from pressure.

Symptoms. Although an inflammatory affection, yet its onset is usually sub-acute, the febrile reaction being moderate, but intense *pain* in the back, aggravated by motion, with *rigidity of the spine* and *constriction around the body*, "the girdle." *Spasmodic contractions* of the muscle enervated by nerves originating at the seat of lesion, with inability to straighten the limbs. If lower part of the spine, *retention of urine, constipation*; if upper part, *dysphagia, dyspnœa*, with *feeble heart*. The muscular contractions are excited or increased by motion, but uninfluenced by pressure. The rigidity and spasmodic contraction of the muscles are followed by *paralysis* more or less complete, death following from paralysis of the muscles of respiration.

If the inflammation extends to the medulla, the above symptoms are associated with *disorders of speech, vomiting* and *delirium*.

Electro-contractility lessened or absent, both as to motility and sensibility in the affected parts.

Prognosis. Grave. Either sudden death from paralysis of the respiration or heart, or gradually, the result of exhaustion.

Critical discharges, such as profuse perspiration or urinary flow or epistaxis occur and are followed by rapid recovery. Cases recovering may have more or less pronounced partial or complete paralysis.

Diagnosis. The points of importance are, deep, boring pain in the back, aggravated by motion but not by pressure, with spasmodic contraction of the muscles, followed by paralysis.

Myelitis will be differentiated from spinal meningitis when discussing the former affection.

Tetanus may be confounded with spinal meningitis. The points of distinction are, in the former have early trismus with rhythmical spasms

excited by peripheral irritation, progressively increasing and not associated with fever.

Treatment. Rest in bed, upon the side or face. *Cups* or *leeches* along the spine, followed by *ice* or the *hot douche* or *hot sponges* or mustard. Active purgation.

To reduce the amount of blood in the vessels of the cord, *aconitum* and *ergota* combined with an *opium* impression. When paralysis (depression) occurs, *quinia*, gr. iij, combined with *ext. belladonna alco.*, gr. $\frac{1}{4}$, three times a day, or *potassium iodidum*, gr. xx-xxx, three times a day, with flying *blisters* along the spine. If the paralysis still persists a *hydrargyrum* impression often benefits.

For paralysis, the *galvanic current* to the spine and nerve trunks, and the *faradic current* to the affected muscles, with the deep injection of *strychnia* and the use of *massage*.

ACUTE MYELITIS.

Definition. An inflammation affecting all the tissues of the spinal cord. It may be acute or chronic, general or partial; characterized by more or less sudden and complete loss of motion.

Causes. Following spinal meningitis; exposure to cold and damp; injuries of the vertebra; prolonged functional activity of the cord; typhus fever; rheumatism; puerperal fever, or during the course of the exanthemata.

Pathological Anatomy. Intense hyperæmia of the substance of the cord, with extravasations, giving the tissues a reddish-brown or chocolate tint, and also serous transudations, resulting in softening of the structure, the color changing to yellow and white, the nerve elements undergoing fatty degeneration, having the appearance and consistence of cream. The membranes also undergo more or less change.

Symptoms. Extent of the symptoms depends upon the extent of the changes and their location. The onset is usually sudden, with a *chill*, *fever*, 103° , *frequent pulse*, with *alterations in sensibility and motility*, viz.: *pain* in the back, aggravated by touch and by heat or cold, with sensations of formication ("pins and needles"), the limb feeling as if asleep, or else complete anæsthesia, associated with severe *neuralgic pains*.

The distinction between *anæsthesia*, insensibility to touch, and *analgesia*, insensibility to pain, must be clearly made.

A sensation of *constriction* around the body and limbs, as if encircled by a tight cord, "the girdle pains," rapidly developing *paralysis*, complete in a few hours, with involuntary discharges. The *reflex functions* are abolished, as seen by attempting to cause movement of the limbs by tickling the feet or by striking the patella tendon. The temperature of the affected limbs is lowered three or four degrees.

Sloughs and bedsores soon result.

The above symptoms of loss of motion and sensibility are associated with more or less pronounced vomiting, hepatic disorders, irregularity of the heart, dyspnoea, dysphagia, apnoea and painful priapisms. The urine is markedly alkaline in reaction.

The *electro-contractility* is abolished.

Prognosis. Unfavorable, death resulting in about ten days; rarely, the duration is prolonged several weeks.

Diagnosis. Acute meningitis is distinguished from acute myelitis by severe pains increased by pressure, with muscular contractions increased by motion, followed by paralysis much less profound, and its favorable termination.

Congestion of the spinal cord is characterized by the mild character and short duration of all the symptoms.

The principal diagnostic points of acute myelitis are the "girdle" around the limbs or body, rapid and complete paralysis, lowered temperature in the affected parts, early and persistent sloughing (bedsores) and alkaline urine.

Treatment. The treatment offers no encouragement. The most that can be done is to endeavor to prevent, as far as possible, the formation of sloughs, by the use of a water bed and sponging the parts exposed to pressure with whisky or with hot and cold water, alternately applied, and the internal use of ergota, or, as recommended by Professor Bartholow, *quinia sulph.*, gr. iij, *ext. belladonna*, gr. 1-2, in pill, three times a day, and the application of the hot douche along the spine.

SPINAL SCLEROSIS.

Synonym. Duchenne's disease.

Definition. A myelitis; an increase in the connective tissue of the cord and decrease of the nerve structure proper.

Varieties. I. *Antero-lateral sclerosis*; II. *Cerebro-spinal sclerosis*; III. *Posterior sclerosis*, or *locomotor ataxia*.

Causes. Generally a hereditary neuropathic diathesis; syphilis; mineral poisons; shocks or injuries to the cord; exposure to cold and wet; mostly occurring between the ages of 35 and 55; males more liable than females.

Pathological Anatomy. The changes in the cord are gradual in their development, and follow a longitudinal instead of a transverse direction.

The form, consistence and color of the cord are altered, it being atrophied, indurated, and of a grayish color.

The changes are hyperplasia of the connective tissue, with granular degeneration, atrophy and disappearance of the proper nerve elements. The nerve roots undergo the same fibroid change. The joints undergo remarkable atrophic degeneration.

ANTERO-LATERAL SCLEROSIS.

Symptoms. The chief symptom is *paraplegia*, or entire loss of motion in the lower extremities. Preceding the paralysis occur *jerking and twitching*, with *cramps* and *stiffness* of the muscles of the affected parts. As the disease is progressing the gait is of a peculiar character, termed by Hammond "the waddle," the patient stepping on the toes and showing a tendency to fall forward. There is a gradual and increasing sensation of heaviness and weakness in the affected limbs. Sensation is unaffected. Reflex phenomena are preserved, at times even exalted. As the morbid process extends upward, the superior extremities suffer in the same manner as those of the lower.

Electro-contractility early impaired, gradually declining until abolished.

POSTERIOR SCLEROSIS, OR LOCOMOTOR ATAXIA.

Symptoms. Gradual onset by *sharp, darting, electric-like pains* in the limbs, with *loss of sensation* in the feet, the subject being unable to distinguish between hard and soft substances in walking, and if the superior portion of the spinal cord is affected, is unable to button his coat.

Loss of co-ordination, the subject being unable to walk upon a straight line with his eyes closed, and with difficulty if his eyes are opened. The *sight* impaired; either double vision or inability to distinguish between different colors. *Reflexes abolished*, "girdle" pains about the body and limbs. Inordinate stimulation of the genital functions and frequent nocturnal emissions. Although the patient is unable to coördinate the muscles, the power is not lost; for, on being supported, he can kick or strike with power.

There is generally entire absence of all cerebral phenomena.

Prognosis. Sclerosis sooner or later terminates unfavorably. It may be retarded for years, but the patient is always unable to walk without great difficulty.

Diagnosis. The symptoms are so characteristic that with care an error in the diagnosis seems impossible.

Chronic myelitis is characterized by paralysis, but the course of the two affections is otherwise so different that error should not occur.

Disease of the cerebellum presents symptoms of incoördination, but they are the result of vertigo, and associated with headache, nausea and vomiting.

Treatment. Insist upon as complete rest as possible. Good nutritious diet, milk being the best.

Potassium iodidum or *hydrargyrum chloridum corrosivum* in full doses often remarkably retard the progress of the affection. The best results are obtained, however, from *argentum nitratum*, gr. $\frac{1}{4}$ – $\frac{1}{2}$, or *oxidum*, gr. $\frac{1}{2}$, three times a day, withholding it at intervals of a few weeks, to prevent discoloration of the skin.

The severe and sharp pains require treatment, at first giving preference to any of the substitutes of opium, but finally opium itself will have to be resorted to.

Galvanism to the spine and Faradism to the affected limbs are beneficial.

NEURALGIA.

Definition. A disease of the nervous system, manifesting itself by sudden pain of a sharp and darting character, mostly unilateral, following the course of the sensory nerves.

Varieties. I. *Neuralgia of the fifth nerve*; II. *Cervico-occipital neuralgia*; III. *Cervico-brachial neuralgia*; IV. *Dorso-intercostal neuralgia*; V. *Lumbo-abdominal neuralgia*; VI. *Sciatica*.

Causes. Hereditary; anæmia; malaria; syphilis; metallic poisons; anxiety; mental exertion; exposure to cold and damp.

Pathological Anatomy. The old axiom of neuralgia being "the cry of the nerves for pure blood" is perhaps only part of the truth. The changes in the nerve trunks or centres have not yet been determined. A fair number of cases present the changes of neuritis.

NEURALGIA OF THE FIFTH NERVE.

Symptoms. *Paroxysmal pain* of a sharp, darting, stabbing character, most commonly at points along the course of the supra- and infra-orbital branches of the fifth nerve of the left side, attended with *increased lachrymation*. When of any duration nutritive changes are observed in the nervous distribution, viz. : *œdema* along the course of the nerve, *gray eye-brows* and *convulsive twitches* of the muscles, termed *tic douloureux*; tenderness at the infra- and supra-orbital foramina, as well as along the course of the nerve.

CERVICO-OCCIPITAL NEURALGIA.

Symptoms. *Paroxysmal pain* of a sharp and lancinating, or deep, heavy, tensive character along the course of the occipital nerve upon one or both sides, extending from the vertex and on the neck as far down as the clavicle, and upwards and forwards to the cheek. May be associated with hyperæsthesia of the skin, and with cramps in the cervical muscles and attacks of herpes.

CERVICO-BRACHIAL NEURALGIA.

Symptoms. *Paroxysmal pains* of a severe boring, burning or tensive character, with *sensations of numbness* and *weakness* of the arm, hand, shoulder, scapula and mamma, with tenderness along the cervical plexus. (Edema of the arm and other parts along the distribution of the cervical plexus occur if the neuralgia is of long duration, the result of nutritive changes, the limb at times becoming pale, the skin glossy, dry and harsh.

DORSO-INTERCOSTAL NEURALGIA.

Symptoms. *Paroxysmal pain* of a sharp and lancinating character along the fifth and sixth left intercostal spaces, often associated with the development of herpes, the so-called *herpes zoster*, or "shingles."

Tenderness at the points where the nerves emerge from the inter-vertebral foramina at the sides of the chest and at points in front.

LUMBO-ABDOMINAL NEURALGIA.

Symptoms. *Paroxysmal pain* of a sharp and lancinating, at times heavy and dull character, following the course of the ileo-hypogastric nerve, ileo-inguinal and external spermatic nerve, supplying the integument of the hip, the inner side of the thigh, the scrotum and labium.

SCIATICA.

Definition. Pain following the course of the sciatic nerve. The sacro-

plexus is made up of the fourth and fifth lumbar and the first two pairs of sacral nerves.

Symptoms. Sciatica usually follows an attack of lumbago, the pain becoming fixed in the sciatic nerve, at times a true neuritis. *The pain is sharp, tearing, shooting or lancinating in character, increased upon motion, shooting along the course of the nerve into the hip, inner side of the thigh, half of the leg, ankle and heel, at one or all of these points, in paroxysms lasting from a few hours to twenty-four hours or longer. The tactile sensation in the foot and motility in the limbs impaired, and if of long duration, wasting of the limb.*

Prognosis. If promptly and properly treated, unless the result of pressure of an exostosis, aneurism or other tumor, favorable.

Diagnosis. *Rheumatism* so-called is the only condition likely to be confounded with neuralgias.

The history of the attack, the character of the pain, with its localized spots of tenderness, should prevent such an error.

Treatment. Rest, easily assimilated but nutritious diet; removal of the cause, if possible. If anæmia, *ferrum* and *arsenicum*. If rheumatic, *alkalies*. If syphilitic or the result of metallic poisons, *potassium iodidum*. If malarial, *quinia*.

For an attack *morphia* and *atropia* hypodermatically affords the most prompt and ready relief.

For *sciatica* prompt relief follows the *deep injection of chloroform*. *Locally, blisters* along the course of the nerve or lotions of *chloral*, *camphor*, *morphia* and *chloroform* combined in solution.

Facial neuralgia is often wonderfully benefited by the internal administration of *extract, gelseminum fld.* gtt. iij-v, every three or four hours, until its physiological effects are produced. All forms of neuralgia are more or less benefited by—

R.	Quinia sulph.....	gr. iij	
	Ferri redact.....	gr. j	
	Acid arsenious.....	gr. $\frac{1}{20}$	
	Aconitiæ.....	gr. $\frac{1}{120}$	M.

In pill every four or five hours.

CHOREA.

Synonym. St. Vitus' dance; insanity of the muscles.

Definition. A functional disorder of the nervous system; character-

ized by irregular spasmodic movements of groups of muscles, with weakness, more or less approaching paralysis, of the affected parts.

Causes. Essentially a disease of childhood; hereditary; reflex from dentition, worms, masturbation or fright; the result of rheumatism in the majority of cases.

Pathological Anatomy. As yet there has been no constant anatomical lesion discovered, the theory of emboli having, however, many advocates.

Symptoms. The onset is usually gradual, the child seemingly grimacing or jerking the arm or hand, as if in imitation, followed by decided, *irregular jactitations* of the muscles of the face (histrionic spasm), of the eyelids (blepharospasm), eyeballs (nystagmus), and the shoulder, arm and hand, finally extending to the lower extremities, interfering with the *motility*; in severe cases, inability of feeding self or holding anything in the hands. The *speech* is often unintelligible, the tongue constantly moving in an irregular manner.

The *heart's* action is tumultuous and irregular, associated with a soft, blowing systolic murmur, most distinct at the base. The muscles are usually quiet during sleep, although this does not always obtain. The mind is somewhat blunted, the temper irritable, the memory impaired. If the irregular muscular movements are confined to one side of the body it is termed *hemi-chorea*.

Prognosis. The vast majority of cases recover, but relapses are very common.

Diagnosis. Chorea was confounded with epilepsy until the points of distinction were pointed out by Sydenham.

Paralysis agitans has general muscular tremor, beginning in one limb, gradually progressing, uninfluenced by treatment; a disease of the elderly.

Post-hemiplegic chorea is the choreic movements of a paralyzed limb.

Treatment. Remove the cause, if possible. Easily assimilated diet.

Many cases improve rapidly by confinement to bed in a darkened room. If the muscular movements interfere with sleep, morphia or chloral are indicated. Regulate the secretions.

Arsenicum is the most reliable remedy yet introduced for the treatment of chorea. It should be pushed to its first physiological effects, then gradually reducing the dose until all symptoms disappear. The form of the remedy best adapted is *liq. potassii arsenitis*, gtt. v, increased to x or

even xv, three times a day. If anæmia be present combine or alternate the arsenicum with *ferrum*.

EPILEPSY.

Definition. A chronic disease, of which the characteristic symptom is a sudden loss of consciousness attended with more or less general convulsions.

Causes. Hereditary; rarely, worry, anxiety, depression or fright. Pressure from a tumor at the periphery, or thickening of the membranes of the brain, causing pressure; dyspepsia; syphilis; uterine diseases.

Pathological Anatomy. There are no constant anatomical lesions as yet associated with epilepsy.

Varieties. I. *Epilepsia gravior*, le grand mal; II. *Epilepsia mitior*, le petit mal.

Symptoms. *Le grand mal* is preceded by a more or less pronounced and curious sensations, the so-called *aura*.

The *attack* proper is *sudden*, the subject *suddenly falling*, with a *peculiar cry*; *loss of consciousness*; *pallor of the face*, the body assuming a position of *tetanic rigidity*, succeeded after a few moments by more or less pronounced *chronic convulsions*, followed by coma of several hours' duration. The subject awakens with a confused or sheepish expression, with no knowledge of what has occurred, unless he has injured himself during the attack, either by the fall, or, what is so common, has *bitten his tongue* during the convulsions.

Le petit mal is manifested by either attacks of *vertigo*, the consciousness being preserved, or by a *passing absent-mindedness*, either from being associated with *slight convulsive phenomena*, followed by *coma* of short duration

The mental functions are not, as a rule, injured by attacks of epilepsy unless they come very frequently. Indeed, when at wide intervals the subject seems relieved by them, "the sudden, excessive and rapid discharge of gray matter of some part of the brain on the muscles," the so-called "electrical storm," having cleared the cerebral atmosphere.

Prognosis. The vast majority of cases will not recover under treatment, but have the frequency and severity of attacks greatly ameliorated, but sooner or later returning with their former severity. Cases the result of the various reflex causes usually recover as the cause is removed.

Diagnosis. *Uræmic convulsions* closely resemble an epileptic attack, but the dropsy or general œdema and albuminous urine of the former should guard against error.

Feigned epilepsy often misleads the most practical expert.

Treatment. To avert an impending attack, inhalations of *amylum nitrite*, gtt. iij-v, a few whiffs of *chloroform*, or the hypodermatic injection of *morphia*.

To prevent the return of attacks, remove the cause, if possible ; attention to the secretions, and the internal administration of *potassium bromidum* in doses sufficient to abolish the faucial reflex and produce the symptoms of bromism, has great power in diminishing the severity and frequency of the attacks ; better results are sometimes obtained by the combination of the various bromides. Cases in which the bromides are not serviceable are sometimes benefited by *argentum nitratum*, *belladonna* or *cannabis indica*. Weak and anæmic subjects usually do better with *strychnia* in full doses than with potassium bromidum. If a history of syphilis can be obtained, the combination of *potassium iodidum* and potassium bromidum will effect a cure.

Whichever of the above remedies are beneficial in any particular case, the permanency of the relief can only be acquired by the continuation of the drug for at least two years after the last attack.

DISEASES OF THE BLOOD.

ANÆMIA.

Definition. A deficiency of red corpuscles and albuminoid compounds in the blood ; characterized by pallor and general weakness.

Causes. Predisposing and exciting.

Predisposing. Sex ; female, pregnancy and menopause ; hereditary.

Exciting. Deficient food, air or sunshine ; excessive work ; mental worry ; prolonged and frequent nocturnal emission ; excessive nursing ; chronic intestinal catarrh ; Bright's disease ; malaria.

Pathological Anatomy. *Post-mortem*, the tissues are thin and shrunken, and bloodless. If the anæmia has been of long duration, patches of fatty change are seen in the various organs. The blood has a brighter color, the result of diminution in the number of red corpuscles and the

quantity of the hæmoglobin; it is thinner than normal, and coagulates slowly and imperfectly, from diminution of the fibrino-plastic constituent.

Symptoms. *Pallor*, gums, tongue, ear and conjunctiva pale. *Muscular weakness*, inability for exertion. *Deficient appetite* and *impaired digestion*, attacks of *vomiting*, result of anæmia of the medulla oblongata. *Quickened respiration*, *irritable temper*, *vertigo* when erect position, attacks of *swooning*, and rarely *epilepsy*. *Irritable heart* with soft *systolic basic murmurs*, attacks of hysteria. Nocturnal emissions in male and deficient menses in female. *Marasmus* in children. More or less general *œdema*, viz., eyelids, ankles, etc. Long continued symptoms of fatty changes of various organs or gastric ulcer.

Prognosis. Favorable if early treated. If protracted, result in more or less general symptoms of fatty degenerations or ulcer of the stomach.

Diagnosis. The symptoms of anæmia are so characteristic that an error is impossible, the cause of it, however, may be hidden.

Treatment. Remove the cause. Easily assimilated, blood-producing diet. Fresh *air*, *sunlight*, and *exercise* short of fatigue. Purgatives with stomachic tonics, to promote digestion.

For the anæmia proper, *ferrum* in some form is the most valuable remedy, but remembering that it is not assimilated if the intestines and liver are torpid.

LEUCOCYTHEMIA.

Synonym. Leucæmia.

Definition. An enormous increase in the white blood-corpuscles accompanied by enlargement of the spleen and lymphatic glands, and alterations in the marrow of the bones; characterized by symptoms of anæmia.

Causes. Unknown.

Pathological Anatomy. The *spleen* is increased in size, density and firmness; the *lymphatic glands* all over the body also enlarge, but are soft to the touch, often fluctuating; the *marrow of the bones* changes from its normal rose color to that of a greenish-yellow; the *liver* also enlarges enormously. The *blood* is paler than normal, its specific gravity reduced from 1.055 to 1.040 or lower, and the white corpuscles increase in number, often exceeding the red.

Symptoms. Those of profound *anæmia* associated with enlargements of the lymphatic glands all over the body or scattered irregularly. Special tendency to *hemorrhages* from the *bowels* and *lungs*. General *œdema*, first seen in eyelids and ankles. *Tenderness* over bones, especially the sternum. The abdomen is enlarged. The sp. gr. of the urine reaches 1.020 to 1.030.

Prognosis. Unfavorable. Average duration two years, if the tendency to hemorrhages does not occur.

Diagnosis. In early stages cannot be discriminated from ordinary *anæmia*, but as spleen and glands enlarge the diagnosis becomes evident and is confirmed if we "puncture the finger of the patient, and receive the blood on a piece of white linen or a lawn handkerchief, and put by the side of it a similar stain of blood from a healthy subject."

Treatment. No specific. Symptomatic. Early, *ferrum* in full doses, regulated nutritious diet, with digestive tonics, may be of service; also *ergota* in large doses. Prof. Bartholow suggests the the following pill—

R.	Quinæ sulph.....	gr. v	
	Ergotin (aq. ext.).....	gr. ij	
	Ferri redact.....	gr. j.	M.

Three times a day.

"*Arsenicum* has been administered hypodermically, and injected directly into the substance of the enlarged spleen with asserted advantage."

HÆMOPHILIA.

Synonym. "Bleeder's" disease.

Definition. A congenital condition characterized by the habitual occurrence of hemorrhages.

Causes. Hereditary.

Symptoms. The *bleeding* appears about the period of first dentition, and consists in spontaneous *hemorrhages* from the mucous membrane of the nose, mouth, lungs, stomach, intestines, or genito-urinary passages, or, in *perfect cases*, hemorrhages occur directly from the fingers, toes, lobes of the ears, back of the hands or arms, without any apparent change in the skin, and continues, in spite of the most powerful means, for days or weeks. *Traumatic hemorrhages* occur if an injury of any kind is sustained about the period of the development of the bleeding.

Epistaxis is the most common form of all those named.

As result of the great loss of blood, the subject suffers from all the symptoms of profound anæmia.

Prognosis. Death is the usual termination, within a few weeks from the time of its development.

Diagnosis. It is impossible to confound the "bleeder's disease" with any other affection.

Treatment. Entirely symptomatic.

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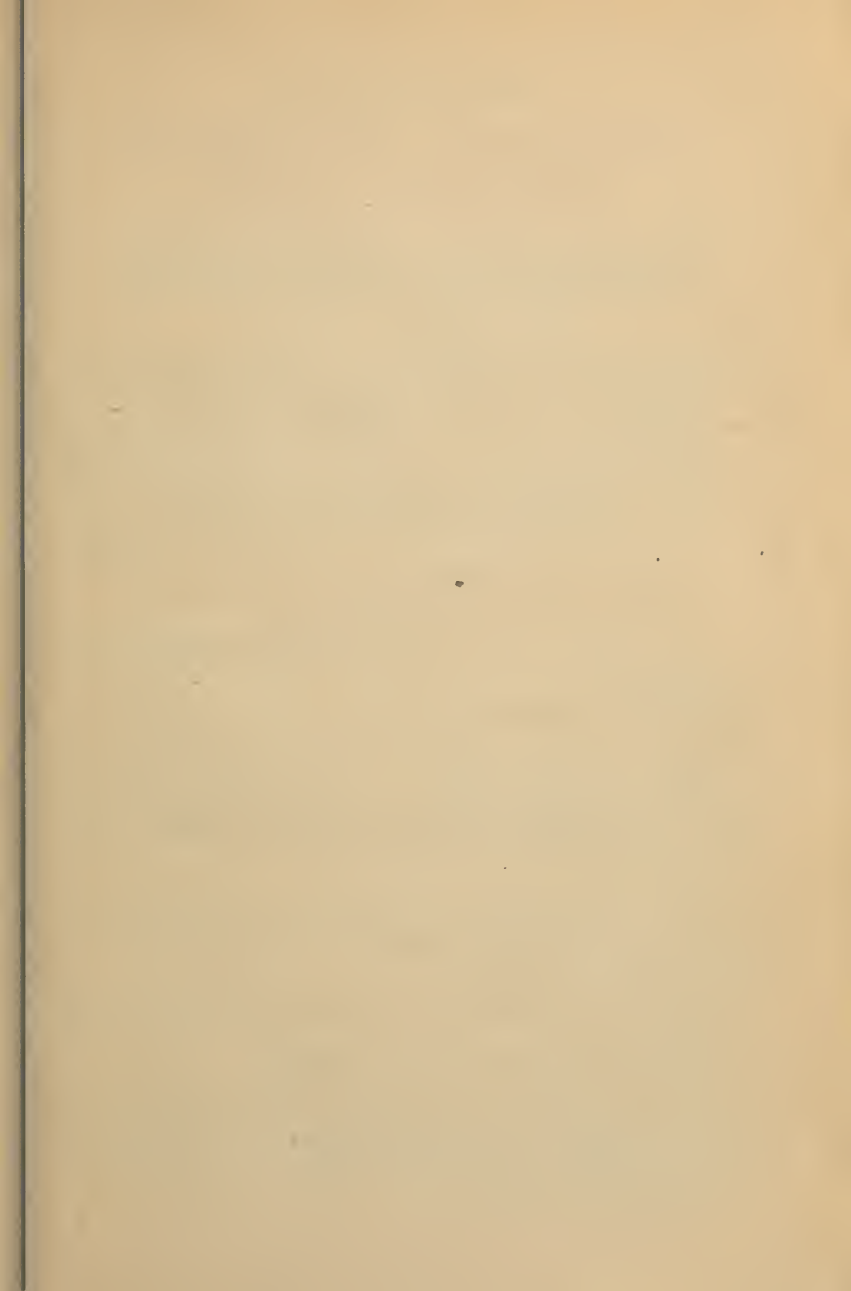
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